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SEPTEMBER 14, 1998 VOLUME 15, NUMBER 37

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

Compaq gives NT an enterprise jolt

By Marc Songini

Microsoft and Compaq last week outlined a broad strategy for integrating their respective operating system technologies, an effort that should result in Windows NT becoming a much more robust and scalable platform.

The companies agreed to graft pieces of Compaq's Tandem NonStop Kernel, Digital OpenVMS and Digital Unix technologies onto NT, and vice versa. Not only is the pact intended to strengthen Microsoft's and Compaq's individual products, but it is also designed to help machines based on NT or Compaq software work better together in mixed environments.

"Customers are working in a heterogeneous environment, and the need to interoperate between Unix and NT is becoming crucial," says James Gruener, an analyst with Aberdeen Group in Boston.

Microsoft's *Paul Maritz wants NT to handle the most demanding apps.*

For Microsoft, the technology transfer should help the company better position NT for handling electronic commerce, transaction processing and other heavy-duty applications. Microsoft intends to incorporate clustering, remote mirroring, management and other Compaq technologies

See **Compaq,** *page 74*

AT&T vows to meet or beat ISP rivals' prices

By David Rohde

Basking Ridge, N.J.

Anxious to grab a leadership share of the corporate Internet access market, AT&T has quietly authorized its salespeople to meet or beat prices offered by competitive ISPs.

The special promotion can potentially whack a fat 20% to 25% off AT&T's usual $2,000 starting price for T-1 Internet access lines — even before long-term contract discounts. AT&T is battling ISPs that

See **AT&T,** *page 76*

Get more online:

- A look at AT&T's overall Internet strategy.
- Overviews of ISPs' service-level agreement plans.

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WinNT 5.0 beta put to real use

Rapid Deployment Program helps customers put NT 5.0 into production.

By Christine Burns

Where can you go today with Windows NT 5.0 Beta 2?

Lots of places, according to customers enrolled in Microsoft's NT 5.0 Rapid Deployment Program. This program is enabling an elite group of large users and Microsoft partners — companies that just can't wait for NT 5.0's general release sometime next year — to put the less-than-gold code into production now.

Here's a sampling of what program members are using the early code for:

- To establish NT 5.0's Active Directory as a metadirectory for linking disparate network operating system and application directories;
- To employ NT 5.0's Intellimirror technology to enforce

See **NT 5.0,** *page 75*

Introducing THE MICROSOFT REPORT

A summary of the company's activities in and out of court. Page 75.

CAREER CRISIS

Feeding frenzy for Java-savvy whiz kids leaves 40-something IT pros high and dry.

By Neal Weinberg

Ed Curry has an eye-popping résumé that includes fluency in seven computer languages, experience with all the major operating systems, an impressive work history and professional accomplishments galore. He wrote software that helped Microsoft win federal security certification for Windows NT, tested chips for Intel and Advanced Micro Devices, and helped develop IBM's OS/400 and OS/2 operating systems.

Curry ran his own test lab business from 1989 through 1996, when he closed up shop and went job hunting. His credentials gave him plenty of reason to believe his phone would be ringing off the hook. "I thought it was a slam-dunk," he says.

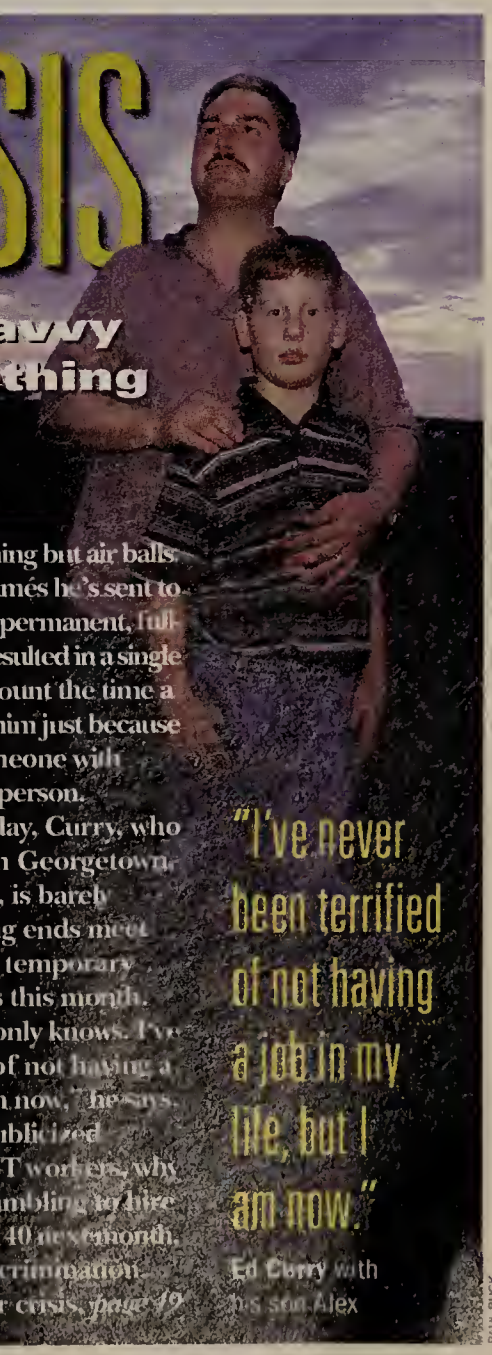
But for the past 20 months, Curry has been shooting nothing but air balls. None of the 2,000 résumés he's sent to companies in search of permanent, full-time employment has resulted in a single interview, unless you count the time a hiring manager called him just because he wanted to meet someone with Curry's experience in person.

SPECIAL REPORT: Age discrimination in IT

Today, Curry, who lives in Georgetown, Texas, is barely making ends meet with a temporary contract job that ends this month. "And after that, God only knows. I've never been terrified of not having a job in my life, but I am now," he says.

Given the highly publicized shortage of qualified IT workers, why aren't companies scrambling to hire him? Curry, who turns 40 next month, chalks it up to age discrimination.

See **Career crisis,** *page 79*



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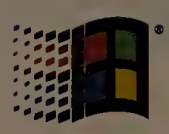
Windows NT Workstation is the right OS for all of your business users. So when you buy new business PCs, be sure to order them with Windows NT Workstation.



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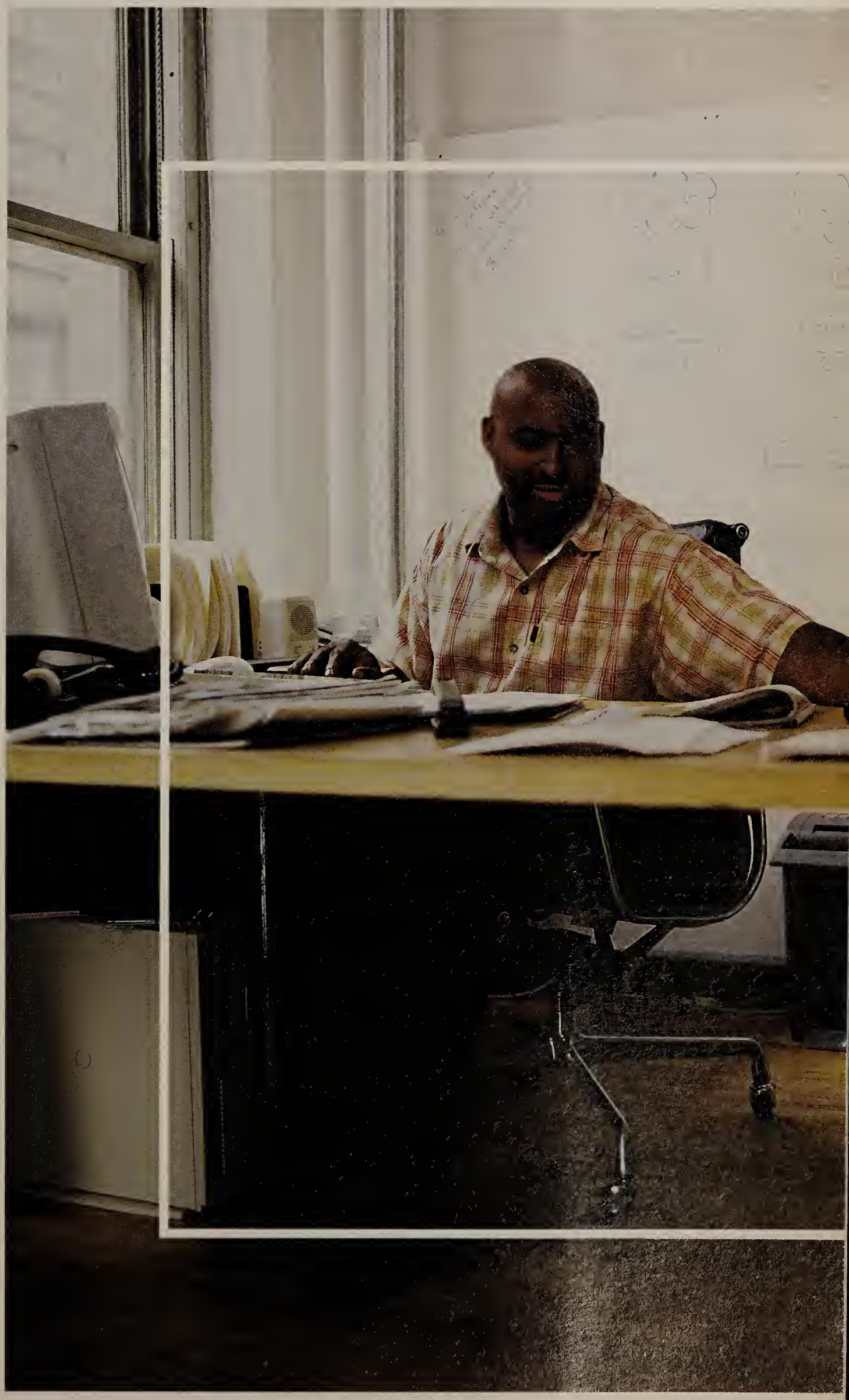
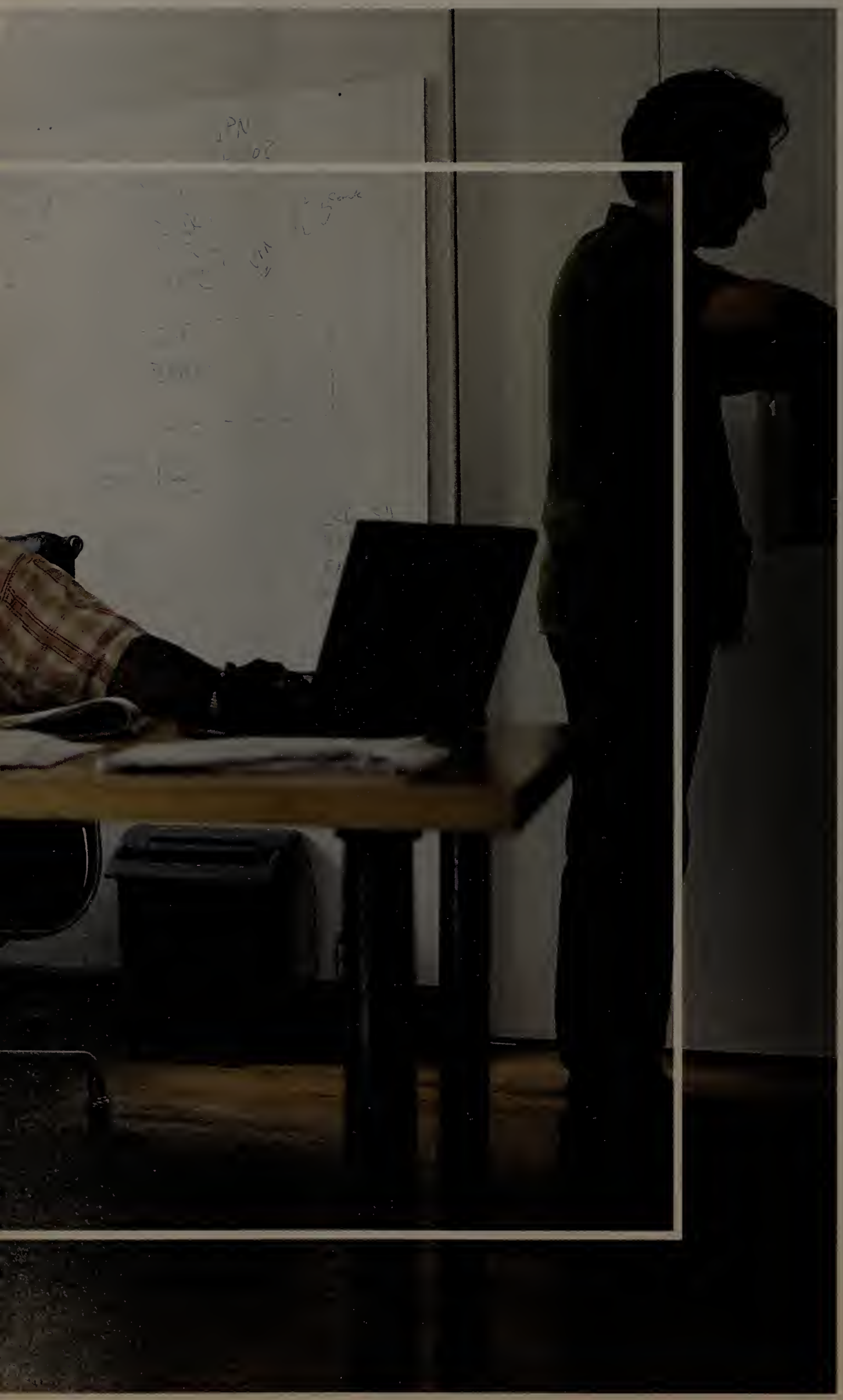
*Performance testing conducted by Netlonel Softwere Testing Laboretories, Inc. (NSTL™) in June, 1998, using Winstone® 98 devaloped by Ziff-Davis Benchmerk Operetion (ZDBOp™) across a variety of computers with 32 end 64 megabytes of memory. Tests performad independently by NSTL without indapendent verification by Ziff-Davis. Ziff-Davis makes no representations or warrenties. Winstone is a registered trademerk or trademerk of Ziff-Devis Inc. in the U.S. and other countries.





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CINDY CHARLES

AHEAD OF THE Y2K GAME

Prudential's Irene Dec says early Year 2000 work has freed the company up to focus on other projects. Page 42.

NT BACKUP PLAN

Seagate revs up a new version of Backup Exec for Windows NT. Page 20.

DISTANCE LINKING

Perle Systems' new server promises to reduce remote access headaches. Page 28.

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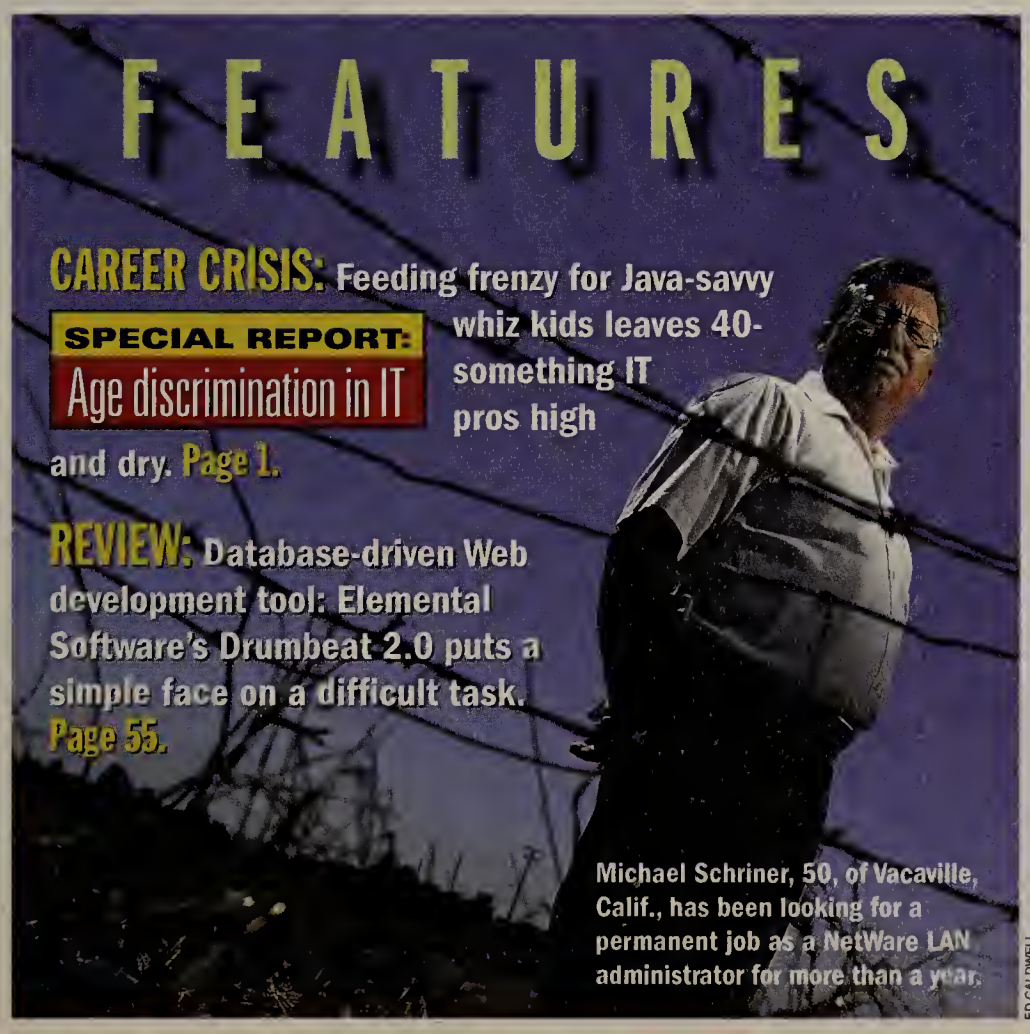

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This Week

Only on Fusion

Water Cooler. News Editor Doug Barney invents the next big thing. It's so big, he won't even tell us what it is, so we'll have to go online like everybody else to find out. **DocFinder: 8842**

Discrimination. Read our Page 1 report on age discrimination, then link to Fusion for articles on racial and gender bias. **DocFinder: 8835**

Doodads. Last week, some company sent us red thermal underwear (and no, it wasn't Novell). What's the strangest stuff you've gotten from vendors? **DocFinder: 8843**

Electronic commerce. Want to know more about The Motley Fool electronic commerce effort described on Page 37? Come online for an expanded version of the story. **DocFinder: 8834**

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News briefs, September 14, 1998

You knew this would happen

How long will it be before some practical joker e-mails a copy of his backside to everyone in the office? Granted, that's probably not the driving application behind an announcement last week by Xerox and Lotus that users of Xerox copiers and printers will soon be able to convert paper documents into Notes e-mail messages or Domino documents. The companies describe this marriage of mediums as a great way to bring order to the chaos of paper-based business processes. Anxious customers will have to keep their pants on, though, because shipment isn't expected until the fourth quarter.

Newbridge pushes ACC over the rail

Newbridge Networks last week moved to clean up its bottom line by selling off its majority share of ACC, valued at $285 million, to international powerhouse Ericsson. ACC makes Tigris, a carrier-class dial-up access concentrator, which Newbridge will continue to resell as the MainStreetXpress 36100 Access Concentrator. Newbridge will also retain its research and development relationship with ACC. The sale keeps any ACC red ink off the Newbridge balance sheet, says Ray Keneipp, an analyst with Current Analysis in Sterling, Va. "It makes Newbridge look financially stronger. The company needs that right now," he says.

Sickly nets

The International Computer Security Association today is releasing its annual report on computer viruses. In the Virus Prevalence Survey, the 300 organizations polled had 86.5 virus infections per 1,000 computers per year, up from 62.5 virus infections per 1,000 computers last year. This is in spite of the fact that 91% of the servers and 98% of desktops had some type of virus protection. Each organization surveyed had 500 or more desktops, two or more LANs and two or more remote locations. The most common ailment: macro viruses spread via e-mail attachments. Boot viruses remain the second-most prevalent virus.

Shooting at 'Robin Hood regulators'

Deutsche Telekom AG's CEO Ron Sommer last week slammed regulators, calling them Robin Hoods for granting "parasitic competitors" unfair use of incumbent networks at low prices. "When regulators simply declare network capacity a cheap commodity, this cannot be good for the economy. It brings cutthroat prices," Sommer said at the *Wall Street Journal Europe's* Fifth Annual CEO Summit on Converging Technologies. Most users would like to see a few more Robin Hoods. Deutsche Telekom currently has more than 92% of the German telecom market.

Building a shiny, happy 'Net

European countries should cooperate with the U.S. to create an Internet that is regulated by the industry rather than by governments, said Ira Magaziner, President Bill Clinton's senior advisor for Internet policy development, at the same *Wall Street Journal* conference. He outlined the importance of the 'Net to the U.S. and world economies, and said it was not up to governments to attempt to control its use and commerce. Magaziner attributed one-third of all economic growth in the U.S. to the building of the Internet. But he warned, "If goods are overtaxed or over-regulated, it's hard to do business."

Feds fine-tune infowar plan

Banks talk with government to set rules for sharing info on net attacks.

By Ellen Messmer
Washington, D.C.

Last year, Clinton administration "infowar" experts began hatching a plan to avoid a possible network Armageddon.

The feds are working hard on an early-warning command center designed to identify the start of an infowar, or hostile attack on key information systems.

The National Infrastructure Protection Center (NIPC) will be the central point for collecting and analyzing security incidents from the commercial world and the government.

Such information could reveal patterns that indicate a coordinated attack is underway.

Housed within the Federal Bureau of Investigation headquarters, the NIPC will soon have a staff of 125 security experts from the FBI, Central Intelligence Agency, National Security Agency, U.S. Secret Service, Department of Transportation and other agencies.

The key to the NIPC's success will be getting cyberthreat information quickly and completely from those under attack.

"This is a place to bring together all the source info, but the 'sensors' that will notify us are the systems administrators in organizations," says Kenneth Geide, section chief of the FBI's computer investigations and operations section, who offered the latest details on the center at last week's InfowarConn conference here.

"The NIPC is dependent on full participation by private enterprise for full information sharing on a timely basis."

Kenneth Geide,
section chief, FBI's computer investigations and operations section

But since businesses consider cyberthreat information to be sensitive data, plans are being hatched about how they can report network attacks without negative repercussions.

Any publicity about a company's network security problems could harm that company's reputation. In light of this, a deal to somewhat "sanitize" the reports is being ironed out with the banking community, which has taken the lead on the issue.

"We need to have more interaction with law enforcement and to have their information coupled with that from intelligence agencies," says Rhonda MacLean, senior vice president of information security at NationsBank, an NIPC project supporter.

Unfortunately, when a hacker incident becomes public, it is too often exploited by the victim's competitors, which may tell customers that their systems are safer. The American Bankers Association and an industry group called the Bankers Roundtable are proposing some ground rules to the NIPC that would involve creating two

See **Infowar,** *page 74*

HP rolls out wireless handheld device

By John Cox

Hewlett-Packard today will announce a handheld device that can scan up to 50 pages of text and send them to PCs, printers and other wireless handheld devices.

The HP CapShare 910, which is about the size of a portable CD player, is aimed at white-collar workers who travel frequently and need to share a document, via fax or e-mail, with remote or main office colleagues.

CapShare weighs 12.5 ounces and has a flat base, looking like a squat, square bookend. Users grip the device and sweep the base over a document.

Fast capture

A new HP page-processing technique captures the image accurately and reliably, according to the vendor.

The device can create a thumbnail black-and-white image of the page, shown in a small liquid crystal screen, in 6 seconds or less.

Using HP's JetSend communications protocol, CapShare can share the stored documents with other CapShare devices.

JetSend is an HP-developed protocol designed to let small intelligent devices communicate over a wired or wireless network. JetSend is embedded in the device's firmware.

The user only needs to enter an IP address, and the protocol makes a connection and negotiates with the other device about exactly how much and what kind of information to exchange.

HP has installed JetSend in four internal IP-based networked printer lines and is licensing it for free to a wide range of other device makers.

The product also has a serial port so it can be connected via a cable to a PC.

CapShare's power source is a pair of common rechargeable AA batteries, which are included with the device.

HP says it expects to begin shipments Dec. 1.

The introductory price is $699.

✆ HP: (888) 306-4636

CORRECTION

A graphic appearing in the article "Begging for bandwidth" (Aug. 31, page 35) was incorrectly labeled. The pie chart depicted current salary budget lines for 1998.

We put the children of Appalachia
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and Citizen's Tel on the map.

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IP telephony: It's coming your way

By Denise Pappalardo
Washington, D.C.

Business users looking to tap into the low-cost benefits of IP telephony may want to check out the new wares at this week's Voice on the Net trade show here.

Many vendors, including Clarent, Lucent, VocalTec and NetPhone, will be rolling out and demonstrating products that could quickly find their way into enterprise nets — if the price is right. IP telephony promises to reduce recurring long-distance bills, especially with regards to overseas calls, and allow users to exploit existing bandwidth more effectively.

Clarent plans on making it easier for users to securely add voice traffic to their virtual private networks (VPN) without slowing existing networks.

Clarent is teaming with Fortress Technologies so Clarent IP Telephony Enterprise Gateway users can encrypt their voice traffic for transmission over their VPNs with less than 5 msec of added latency, says Tom Kershaw, director of marketing at Clarent. Because encrypting any type of traffic — voice or data — adds latency, Clarent worked with Fortress to enhance the way the two devices hand off IP packets, Kershaw says.

Also at the show, Lucent and VocalTec plan to prove different vendors' IP telephony gateways are interoperable. Most gateways are not compatible today. But over the past few months, Lucent and VocalTec have been working out interoperability issues with the help of ITXC, a wholesale IP telephony service provider.

This week the two vendors are expected to demonstrate how their products support the International Telecommunication Union's voice-over-IP specification, H.323, and exchange voice traffic.

"This is a good thing for the industry, but it's small," says Jeff Pulver, president of Pulver.Com, an IP telephony consulting firm in Melville, N.Y. It's expected to be at least two years before multivendor gateways are generally interoperable, Pulver says.

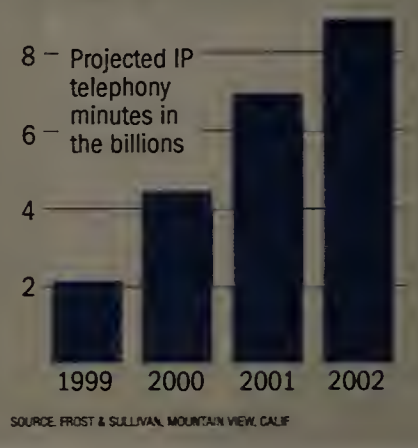
For business users in small or mid-size offices, NetPhone is this week planning to introduce NetPhone Connect IP telephony gateway and NetPhone Connect Intranet PBX. NetPhone's gateway and PBX run on Windows NT servers.

Losing voice service is unacceptable to business users, so NetPhone has developed a failover board, called Always Up. The board fits in an NT server and supports calls and dial tones even if a server crashes, NetPhone claims.

The company's IP telephony gateway and IP PBX are slated for availability in the first quarter of next year for $15,000 and $22,000, respectively. ■

Voice-over-IP impact

As vendors of voice-over-IP products are making their wares more business-user friendly, IP telephony is expected to become more popular.



SOURCE: FROST & SULLIVAN, MOUNTAIN VIEW, CALIF.

Nortel unveils SNA/IP migration strategy

By Jim Duffy
Billerica, Mass.

Nortel's strategy for converging SNA traffic onto IP backbones hinges on melding the data link switching capabilities of its Bay Networks routers with the quality-of-service (QoS) features in its frame relay and ATM WAN switches.

Following its acquisition of Bay, Nortel last week divulged a phased approach for merging IBM SNA and IP traffic. The design will ultimately let users run both types of data over one network with the same reliability and availability that they have with separate nets, Nortel claims.

Nortel's strategy comes one month after Cisco said it would use its SNA/IP integration experience as a competitive advantage over Nortel and Lucent (*NW*, August 10, page 21). Cisco's plan also makes liberal use of Data Link Switching (DLSw) with some proprietary extensions that Cisco calls DLSw+.

DLSw allows users to encapsulate SNA traffic in IP packets for transmission over an IP routed backbone.

Nortel officials insist the company's announcement was not a response to the Cisco offensive.

"We've been in a competitive environment, especially with DLSw, since 1993," says Don McGinley, senior SNA product manager at Nortel's Bay Networks division. "If you go back in Bay's history, what you'll see is a consistent standards-based strategy that has dealt with customer requirements. From a competitor environment, that hasn't always been the case."

Maybe not, but Cisco's nonstandard approach has earned it 80% of the 1997 SNA router market, according to International Data Corp. (IDC) in Framingham, Mass. Nortel is a distant second with 5.4%, according to IDC.

Still, Nortel presses on. Its SNA-over-IP plan involves four waves of product rollouts over the next year and beyond. Nortel is already shipping the first wave of features, which includes DLSw, Backup Peers and Advanced Peer-to-Peer Networking Boundary Function (APPN/BF). Backup Peers allows users to maintain SNA sessions if a primary link between routers goes down. And APPN/BF allows users to tie large SNA nets together as one.

Phase 2, which will roll out over the remainder of the year, will include scalability enhancements for DLSw and APPN, a 155M bit/sec ATM attachment for Nortel's 5745 mainframe channel-attached gateway, and downstream physical unit concentration for the 5745.

The features will let users build bigger SNA/IP nets and give them more high-speed options for attaching mainframes to IP networks.

In Phase 3, which will commence in the first half of 1999, Nortel will add Resource Reservation Protocol (RSVP) to its DLSw software and add DLSw support to its router configuration tool. RSVP will let users request bandwidth and time-of-day transmission requirements for SNA data on the IP network.

Phase 4 will bring support for IBM's High-Performance Routing (HPR)-over-IP feature. HPR adds congestion control and rerouting features to APPN. Nortel did not divulge a time frame for its Phase 4 rollouts.

Users can wait.

"HPR may come into play at some point in the future," says Brett Frankenberger, telecommunications engineer at Union Pacific Railroad in Omaha, Neb. "Right now, all of the WAN side of things is still traditional SNA — there's no APPN going on. It's not something that's on the plate to do real soon."

✆ Nortel: (978) 670-8888

Sun's Solaris-NT integration plan draws cautious support

By Chris Nerney
New York

If the design works, IT managers say, Sun's plan to run some Windows NT services on the Solaris operating system could solve major scalability and reliability issues in their networks.

But "if" is the key word, and IT professionals interviewed at last week's Enterprise Computing Forum say while intrigued, they are in no rush to try the new server software, called Project Cascade.

Due in early beta in November, Cascade is Sun's bid to increase its stake in the enterprise server market by taking advantage of NT's popularity. At the same time, Sun is looking to exploit NT's perceived stability and scalability weaknesses.

Sun officials say Cascade, based on AT&T's Advanced Server for Unix, will enable customers to port native NT directory, security and printing services to Solaris on SPARC and Intel platforms. The combined software technologies should enable customers to consolidate servers, Sun officials say.

One university IT manager says he would love to cut costs on the number of servers in his sprawling network. "The whole idea of server consolidation makes sense," says Ted Dodds, associate vice president of information technology at the University of British Columbia in Vancouver.

Sun CEO Scott McNealy told an audience at the New York Hilton that users are driving the company's decision to develop software enabling its servers to run the popular NT server.

While network professionals interviewed at last week's forum all liked the idea of Cascade,

"We're interoperating with Microsoft's products because that's what our customers want."

Scott McNealy, CEO of Sun

particularly the interoperability and promise of server consolidation, most don't plan to be early adopters.

"I might play around with Cascade, but I really don't know how I'd use it yet," says Jim Domanski, vice president of technical services and operations for the Book of the Month Club's customer services unit in Mechanicsburg, Pa.

A commercial release of Cascade is tentatively set for early next year. Pricing has not been determined. ■

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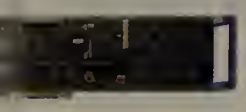

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Gigabit Ethernet to go copper

Alternative to fiber-based network technology could mean lower prices.

By Jeff Caruso

Users wanting speed without a high cost may get their wish next year, when the copper version of Gigabit Ethernet is standardized by the IEEE.

Industry watchers predict prices of copper-based Gigabit Ethernet cards will sink as low as $250, much less than the fiber-optic versions, which start at around $750. Copper-based switch ports are expected to cost at least 25% less than their fiber counterparts.

Vendors expect to have copper prototypes by year-end, with products shipping as early as the first quarter of next year. At the same time, users can expect to see 100/1000M bit/sec cards, adjustable in the same way 10/100M bit/sec cards are today, says Stephen Haddock, chief technical officer at Gigabit Ethernet switch maker Extreme Networks.

The standard will become final by March "with a good tailwind," says Colin Mick, editor of the IEEE copper Gigabit Ethernet document and principal of The Mick Group. The IEEE working group on the topic, 802.3ab, met earlier this month to go through comments on the latest draft, and Mick says there are no major glitches at this point. The working group hopes to close its ballot by November.

But Mick cautions that the standard goes into uncharted territory. Unlike Fast Ethernet and fiber Gigabit Ethernet, the physical interface for copper Gigabit Ethernet is untested in the real world. Fast Ethernet's physical interface was based on FDDI, and Gigabit Ethernet was based on Fibre Channel.

The physical layer for copper Gigabit Ethernet draws on 100Base-T2, a standard for Fast Ethernet over two pairs of wires in a Category 3 cable. Under 100Base-T2, the other two pairs in the cable could be used for a phone line, but the standard overcame the problem of any cross-talk interference that phone conversations might generate. Still, the standard never resulted in commercial products because it came out so late, Mick says.

The copper version of Gigabit Ethernet uses all four pairs of wires in a Category 5 cable, so the technology needs to get past the same cross-talk hurdles. Mick says the working group has solved that problem, but only in simulations.

A factor that may drive up the cost of copper-based Gigabit Ethernet is the speed needed on the receiving processor of a network interface card or switch, Mick points out. To keep up with the gigabit rate, the processor has only eight nanoseconds to retrieve a full byte from the cable, meaning the processor would have to be as fast as a 486 chip, he says.

Still, Mick says he expects the first copper Gigabit Ethernet adapters to be priced "considerably under $500."

Copper-based Gigabit Ethernet is likely to be confined to server connections. In network backbones, price is less of an issue than other factors, such as reliability. Plus, fiber doesn't have the copper standard's distance limitation of 100 meters.

"I'm sure in a year or two we'll end up with some copper and a lot of fiber Gigabit Ethernet," says Steve Toy, assistant network systems engineer at SAS Institute, which has fiber Gigabit Ethernet. In the backbone, the SAS Institute needs fiber optics to travel up to a mile between switches.

But backbones may benefit as well, as copper Gigabit Ethernet starts to put price pressure on fiber-optic components, says Justin Smith, senior analyst at International Data Corp.: "There's plenty of room to get fiber transceiver costs down."

The result, Smith says, is that users at smaller companies, with less advanced nets will be able to afford Gigabit Ethernet. ■

HIGH-SPEED HISTORY

Though the fiber version has been standardized, the story of Gigabit Ethernet standards isn't quite over.

Nov. '95	IEEE commissions high-speed study group
May '96	Gigabit Ethernet Alliance formed
July '96	IEEE creates task force for fiber Gigabit Ethernet
March '97	IEEE creates task force for copper version
May '97	Gigabit Ethernet technical demo at N+I
June '98	Fiber Gigabit Ethernet standard ratified
Nov. '98	Copper working group expected to close ballot
March '99	Copper Gigabit Ethernet standard expected to be ratified

Visual Networks helps users track packets

By Jeff Caruso
Rockville, Md.

Visual Networks this week will unveil tools to help enterprise users better track their WAN service-level agreements (SLA).

The tools will appear in Version 4.3 of the company's Visual UpTime software. Users can now examine specific traffic types — such as e-mail, File Transfer Protocol and HTTP traffic — by monitoring packets by IP socket number. Users can see how much bandwidth these traffic types consume and can capture packets of a certain kind for closer examination.

Another addition to Visual UpTime is the ability to monitor interactions between IP end stations. That way, users can pin down which end stations are taking up the most resources.

"The neat thing about it is you can home in on conversations," says Ben Vogelgesang, telecom administrator for Wheat First, a financial institution that uses Visual UpTime to monitor its 200-node frame relay network. "Before, you could pick things out, but the process was convoluted."

As a beta customer for Version 4.3, Wheat First used the new traffic tracking feature to identify a problem with Microsoft Exchange servers that were taking up a lot of bandwidth at certain locations. Vogelgesang discovered that configurations on some individual PCs were to blame and could be easily fixed.

Visual Networks is also making the SLA reporting available on a daily, weekly or monthly basis. Previous versions produced data about network availability and round-trip delay, "but it came to you at the end of the month, after all the events had happened," says Randy Riemersma, vice president of product management at Visual Networks.

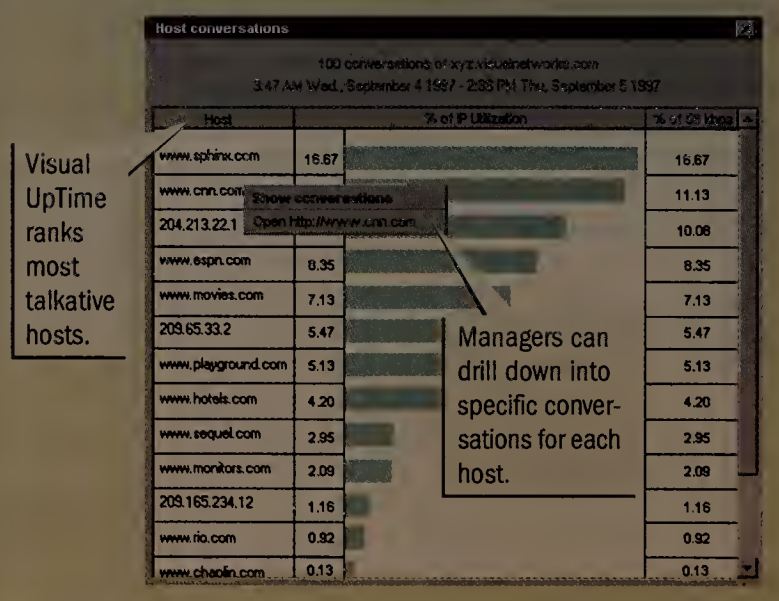
Still, it would be better to have reports that are even more granular, according to Vogelgesang. Reports based on a 24-hour day are fine, but his network is most active between 8 a.m. and 5 p.m., he says.

The new version of Visual UpTime is expected to ship next month. Complete Visual UpTime systems start at about $12,000.

✆ Visual Networks: (800) 240-4010

LISTENING IN

The new release of Visual UpTime can track the sites that are creating the most noise on the network.



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Exchange customers talk collaboration

By Paul McNamara
Boston

Companies flocking to Microsoft's Exchange Server may be looking for enterprise-class e-mail first and foremost, but they also want a versatile platform on which to build future collaborative applications.

At Microsoft's annual Exchange Conference here last week, the company whetted customers' appetites with previews of upcoming features in Exchange and its Outlook client. Many of the 4,000-plus conference attendees applauded Microsoft's direction and blueprints, but some raised questions about the company's ability to elevate Exchange to the groupware functionality levels already attained by Lotus Notes and Domino.

"In the past, we focused on the individual," said keynote speaker Brian Valentine, general manager of Microsoft's Server Applications Division. "Now we're going to focus on the team."

That focus can be seen in plans for Outlook 2000, a product scheduled to ship early next year that includes new links between the e-mail client and other Microsoft Office applications. This integration will allow a user, for example, to e-mail an Excel spreadsheet or Word document to a colleague directly from those applications, as opposed to sending them as an attachment.

Microsoft also informed conference attendees of the company's plans to add support for Microsoft's NetMeeting and NetShow conferencing software in Outlook. The messaging client will also gain features to monitor whether colleagues are online and to exchange peer-to-peer instant messages. In addition, Outlook will include an Application Design Wizard organizations can use to develop customized collaborative applications.

Microsoft's business partners are also providing new products to boost the workflow, document management and collaboration capabilities of Exchange. Last week, Compaq announced shipment of its Work Expeditor software, which industry experts believe will help close the groupware gap between Exchange and Notes (*NW*, Sept. 7, page 1).

"Collaboration will be the real value in Exchange," says Keith Hall, Exchange coordinator for Conoco in Houston. "We're all over the world and have expertise located in several key places. We want that expertise to be available to everyone, everywhere."

Integrating Outlook with other Office applications will make collaboration easier and less expensive, according to Mark Benedict, a systems analyst with defense contractor CAS of Newport News, Va.

"One of the things we're concerned about is the training overhead involved in any new application," Benedict says. "Collaborative planning for military decision makers involves a number of different agencies, so we're looking for a way to let them work together using tools they're already familiar with."

Microsoft still has work to do before it can claim to have closed the groupware gap between Exchange and Notes, according to some who attended the conference.

"Exchange is becoming more mature as a groupware platform, but you really can't compare it to Notes," says David Marcil, a senior technical consultant for CompuSven of Naples, Fla.

By way of illustrating the difference, Marcil says he was not impressed with a Microsoft keynote demonstration of new free tools the company has made available for converting Notes applications into Exchange applications. In the demonstration, a Notes address book was converted into an Outlook form.

"That was a pretty brain-dead application," Marcil says, adding that his company uses a Notes-based contact-tracking application that "would be too complex to turn over to Exchange."

One industry expert who heard Microsoft's conference pitch believes the company needs to sharpen its messaging message.

While Microsoft's tools support many collaborative applications, the company still needs to do a better job helping customers match collaborative applications to their business needs, says David Marshak, an analyst with the Patricia Seybold Group in Boston.

"Microsoft has a lot of the pieces, but it doesn't have that holistic approach that Notes and Domino have," Marshak adds. ■

Favorable Exchange rate

The following figures are cited by Microsoft as evidence of the momentum behind its Exchange Server.

- An installed base of 16.6 million seats since debuting two and a half years ago.
- 14 deployments of more than 50,000 seats.
- Seven deployments of more than 100,000 seats.
- Exchange is the primary e-mail system in 26 of the 50 largest U.S. companies.
- Exchange outsold Lotus Notes the past two quarters, according to Electronic Mail & Messaging Systems' newsletter.

Microsoft Exchange Conference

Oracle turns up 'Net database, adds Java support

By John Cox
Redwood Shores, Calif.

Oracle's unveiling today of its feverishly promoted Oracle 8i (for "Internet") database will be a boon to database administrators and Java programmers, observers say.

The "8i" moniker makes the database sound new, but it simply changes the original name: Oracle 8.1. The change is intended to portray the database as uniquely designed for Internet applications. The 8i version is due out before year-end.

Oracle 8i does incorporate some impressive features, developers say. These features include:

- A built-in Java Virtual Machine (JVM).
- Graphical user interface tools for faster creation of database-stored procedures in the form of Java Beans, which are software components written in Java.
- Vastly more efficient client connections, which one user said would increase by 10 to 15 times the number of users in the same amount of memory.
- Web-based access to the database server, which also now has a built-in basic Web server.
- Faster execution of Web forms, which are the graphical front end for many Web database applications.
- The Internet File System, which becomes part of the database software. File systems are ordinarily the domain of the operating system.

"Without any doubt, the most significant feature in 8i is the support for Java in the database via a JVM," says Elton Barrendse, CEO of Quintessence Systems, a U.K. software company that converts Oracle PL/SQL code into Java.

"8i completes the distributed applications story for Oracle because business logic can now be developed in a single, powerful and nonproprietary language [Java] and deployed at the client, the application server or the database," he says.

One big performance gain comes from slashing the network bandwidth demand per client connection from about 1M bit/sec to less than 100K bit/sec.

The new file system should make it easier for administrators to use the database to manage all kinds of files through the use of new data types.

"You can store the files in the database itself, or store links to files on other servers," says Joe Hudicka, CEO of Dulcina, an Iselin, N.J., software house specializing in Oracle systems. ■

Lotus crashes Microsoft party

The conference attendee is stuck on a shuttle bus, ostensibly headed to a keynote address at the Fleet Center, but he is actually going nowhere fast because of road construction that has ripped this city apart.

"I want to know whose bright idea it was to come to Boston," the fellow chuckles.

Good question. After all, there are plenty of places to host 4,000 Microsoft Exchange customers that are not smack in the lap of Lotus, the Cambridge, Mass., maker of Notes and Domino.

Microsoft insists its choice of Boston was dictated by the company's desire for an East Coast venue, not gamesmanship. But that didn't mean Lotus had to lay out a welcome mat for Microsoft.

First there were the Lotus shuttle buses — festooned with Notes banners — that greeted conference attendees with an offer of free transfers when they landed at Boston's Logan Airport. Then there were the free Lotus T-shirts distributed at the conference center, which if actually worn on the show floor qualified a daring wearer for various prizes, including hard-to-come-by tickets for a Red Sox-Yankees game.

Finally, there was a "Boston E-party" (Get it? Instead of Tea Party.) that Lotus offered the Microsoft crowd as an alternative to the official conference social event.

Hey, all's fair in love and software.

By the way: Lotus has always held its annual customer conference in Orlando.

Don't be surprised, however, if it's in Seattle next year.

— *Paul McNamara*

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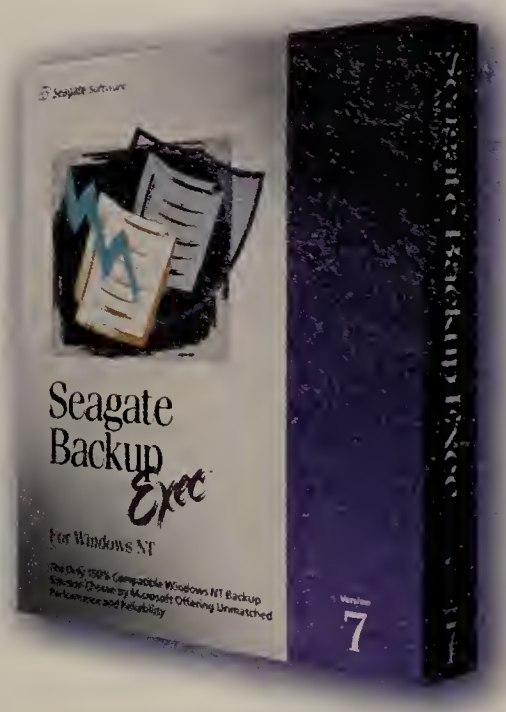

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BellSouth demands fees on IP telephony

RBOC claims FCC statements let it collect access fees, though agency has made no formal ruling.

By David Rohde
Atlanta

Internet telephony and IP carrier networks could lose one of their main potential advantages — lower prices — following a controversial move by BellSouth.

The regional Bell operating company earlier this month wrote to an unspecified number of IP telephony providers telling them they will have to start buying BellSouth services the same way long-distance carriers do.

That move means IP telephony carriers will no longer be able to terminate calls to users merely by purchasing trunks to the RBOC and paying ordinary monthly charges. Instead, carriers will have to pay access fees averaging a little more than 2 cents per minute for the duration of all calls they carry, just as the long-distance carriers do.

If BellSouth enforces such a move, analysts say it would mean IP telephony providers would have to raise the price of their services to about the same range as regular phone calls.

As justification for their move, BellSouth officials cite an April report to Congress by the Federal Communications Commission. The report said the FCC was considering requiring IP telephony carriers to pay access charges on the grounds that a call from one telephone to another over the Internet is essentially the same as a regular telephone call. But the report did not order such payment.

Exemption extinction?

ISPs are currently exempt from paying access fees on all their traffic on the grounds that their data transmission services — which make up the vast majority of their traffic — constitute a value-added service. RBOCs and others have complained that the telephony portion of this traffic doesn't qualify for such an exemption.

Some packet-based telephony carriers with private IP networks can't even hide behind a veneer of value-added data services, BellSouth officials add. "You'll find that a number of them are not even using the Internet," says Ernest Bush, BellSouth assistant vice president for federal regulatory affairs.

> *"Nobody wants to be the first one to go to the FCC and tee up an actual rule making."*
>
> **Colleen Boothby,** *partner, Levine, Blaszak, Block & Boothby*

But BellSouth officials were cagey about exactly which carriers they had sent the letter to. Bush says BellSouth sent letters to a "relative handful" of companies. He declined to identify whether it was sent only to companies whose main business is IP telephony or to others — such as Qwest Communications or even AT&T — that are offering IP telephony on trial or as part of a larger family of services.

One 'return to sender'

But at least one company — ICG Communications — last week rejected BellSouth's demands, saying the carrier has no legal right to levy such charges.

Some observers suggest the letter — which BellSouth officials made widely known was posted on the World Wide Web — was more of a political ploy than a serious attempt to collect new revenue.

The FCC is not moving quickly to put its suggestion — that IP telephony could be subject to access fees — into a formal proposal and debate it, explains Colleen Boothby, a partner in the Washington, D.C. law firm Levine, Blaszak, Block & Boothby, which represents user interests. Either side of the debate — the RBOCs or the ISPs — could have petitioned the FCC to do so.

"But nobody wants to be the first one to go to the FCC and tee up an actual rule making," Boothby says. "This way BellSouth is trying to smoke out the folks it thinks are sending phone calls over the lines. And it forces those people to go to the commission and get relief, rather than the other way around."

Had BellSouth demanded access fees on IP telephony, "it would have been kissing goodbye potential revenue from all the ISPs that are not doing IP telephony," Boothby says. Now there's little risk in doing so because the court's ruling makes the possibility of access fees on Internet data traffic all but dead. ■

Bell Atlantic puts out welcome mat for 'Net voice

By Tim Greene

While other local carriers want to squeeze as much money as they can out of competitors that sell IP telephony, Bell Atlantic has taken a step toward keeping the service low-priced.

Last week, Bell Atlantic agreed to make it easier for IP telephony vendors to complete calls on the company's regular voice network via a new IP gateway service.

ITXC, an IP voice carrier that is piecing together a worldwide IP voice network using the Internet, private lines and multiple affiliates, is the first Bell Atlantic customer to use the gateway service that links IP nets to Bell Atlantic's circuit-switched network.

Potential savings

Incoming international IP phone calls from ITXC's network will be terminated at a Bell Atlantic IP gateway in New York. The gateway will dial up the destination phone number on the public phone network and patch the call through.

Before, ITXC had to maintain its own gateway and access Bell Atlantic's network over leased lines, according to Mary Evslin, vice president of marketing for ITXC. It costs ITXC less in staffing and hardware to hire Bell Atlantic to run the gateway, she says.

Because Bell Atlantic's business is based on providing reliable phone service, the company is well qualified to run the gateway, Evslin says. "They're better at running a voice network. They know how to do commercial phone calls," she says.

In addition, the service lets ITXC focus on the IP end of phone calls, which is ITXC's main business. "We're trying to establish an IP voice network where currently there is none," Evslin says.

The service handles only inbound calls destined for Bell Atlantic's network, not those originating from phones within the company's network.

But Bell Atlantic is considering such an origination service, according to Hardy Moebius, director of business development for Bell Atlantic's carrier services division.

The goal will be to price the service somewhere between the access fee IP telephony vendors pay now — nothing — and the full 2 to 3 cents-per-minute access fee the regional Bell operating companies charge long-distance carriers.

While BellSouth is trying to apply the same access regulation to IP telephony vendors that it applies to long-distance carriers, Bell Atlantic recognizes that IP telephony is different from traditional long distance, and is working on an alternative way to charge access, Moebius says.

The service Bell Atlantic has in mind would route calls onto IP networks and give the IP telephony vendor call information needed for billing, he says. The IP telephony vendor would pay for that service.

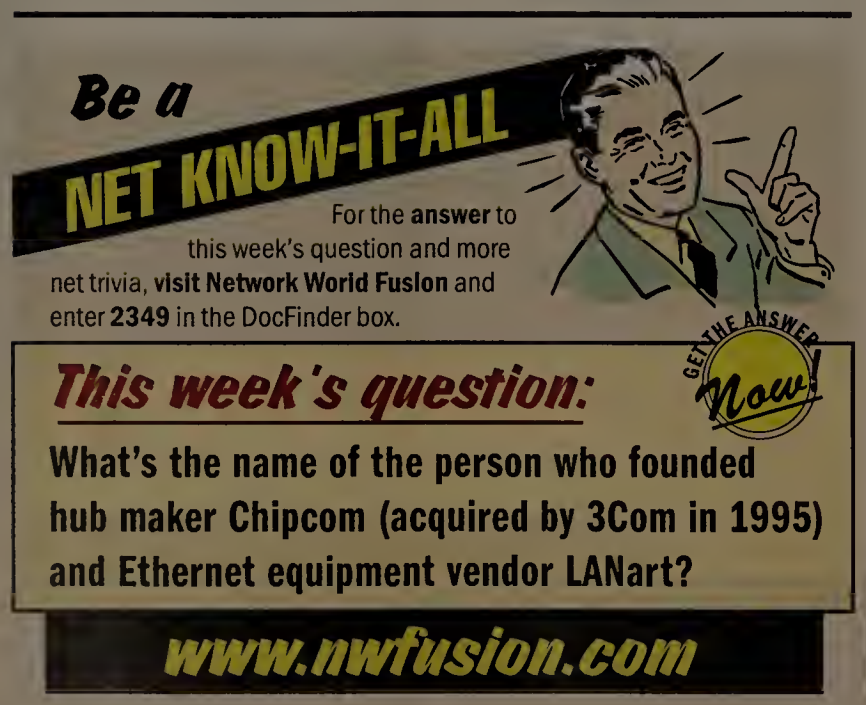
"Now we have to deal with, 'How do we charge for this?'" Moebius says. He could not say how close Bell Atlantic was to answering the question, but the company is studying various pricing models.

RBOCs want to charge ISPs an access fee primarily because data calls to ISPs tie up RBOC networks far longer than typical voice calls. But so far, the Federal Communications Commission says RBOCs cannot charge an access fee for those data connections.

However, the FCC says it sees no distinction between a circuit-switched voice call and an IP voice call. The FCC has fallen short of explicitly sanctioning access fees for IP voice service providers. ■

PROFILE: ITXC CORP.

Based: Princeton, N.J.
Founded: July 1997
Employees: 46
Funding: $10 million from Intel, Chase Capital, Flatiron, VocalTec, Spectrum and Polaris.
Services: WWeXchange, wholesale IP telephony service bringing together IP telephony vendors and ITXC affiliate companies to provide worldwide IP phone service.
Competitors: VIP Calling, AT&T Global Clearinghouse.



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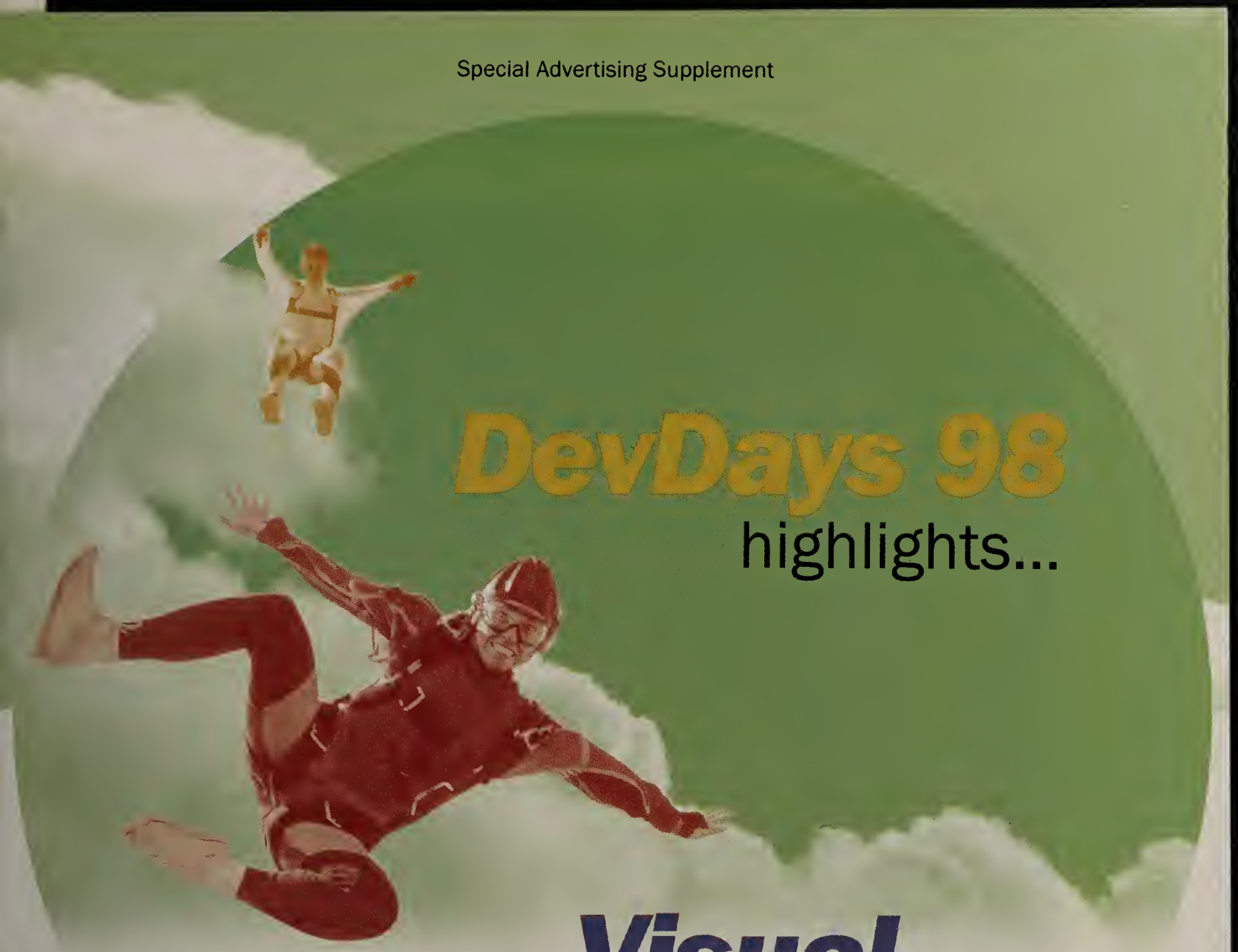

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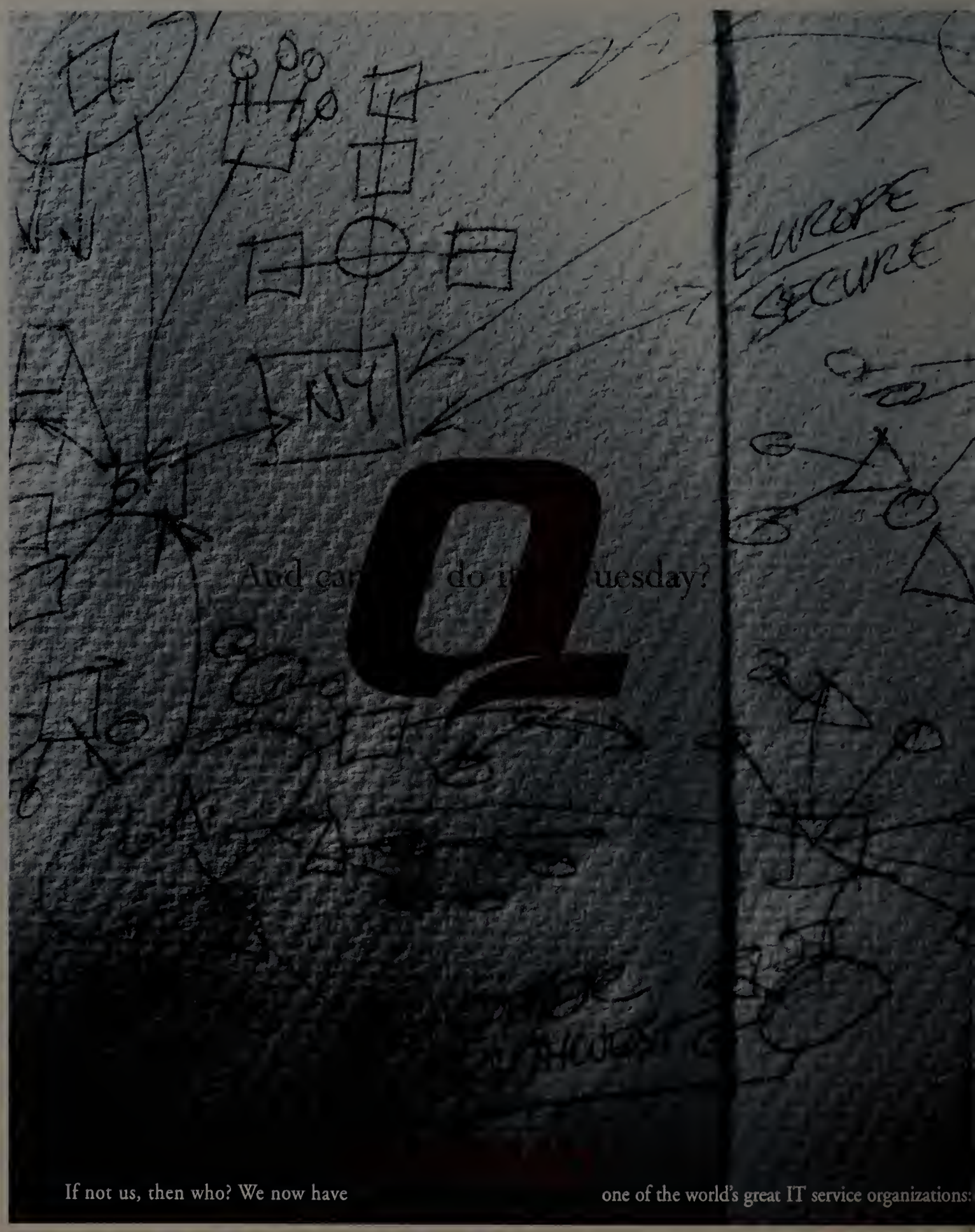

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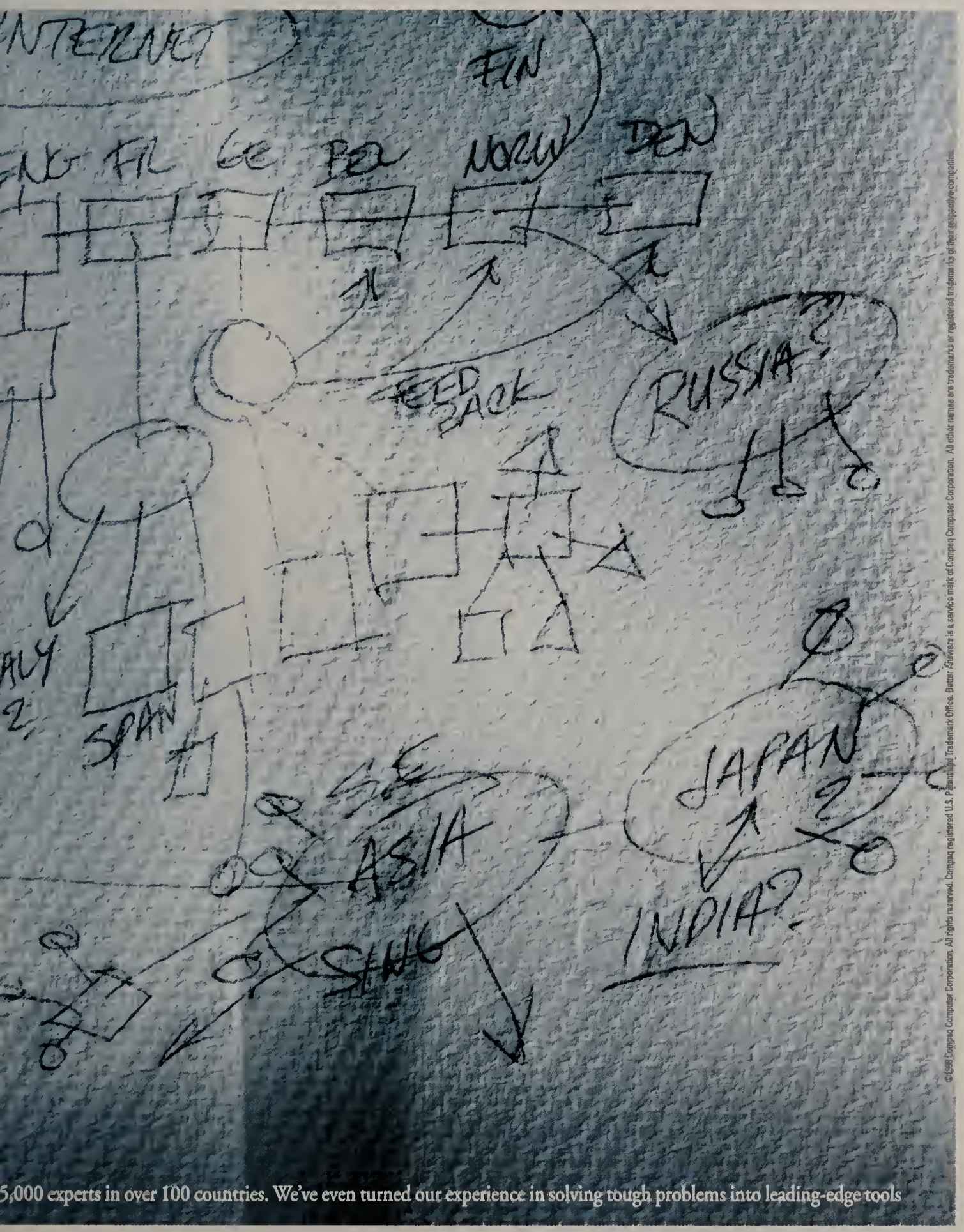

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Digital_Nervous_System:
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Information technology today allows organizations to dramatically reduce their cost structures, to re-engineer their business processes and to expand their product and service offerings to their business partners and customers directly over the Internet. Companies that have harnessed technology to provide these competitive advantages have a Digital_Nervous_System. A Digital_Nervous_System relies on connected PCs and integrated software to make information flow rapid and accurate. It helps employees act faster and make more informed decisions. It prepares companies to react to unplanned events. It helps close the gap between a corporation, its customers and its business partners. It lets organizations focus on business, not technology. Creating a true Digital_Nervous_System takes commitment, time and imagination.

The framework for building a Digital_Nervous_System is the Windows Distributed interNet Applications Architecture (Windows DNA)—a new generation of solutions that brings together the worlds of personal computing and the Internet. Windows DNA is the first application architecture to fully embrace and integrate both the Web and client/server models of application development. Developers can use Microsoft's development suite Visual Studio 6.0 (announced at DevDays 98) as the foundation for building successful DNA applications.

Building enterprise applications

Integrated enterprise applications are a primary element of a Digital_Nervous_System. Building such applications requires up-front attention to the design process, and requires modular, open application architecture. As the use of information technology changes to meet new business needs, the definition of enterprise applications is also evolving. While enterprise infrastructures and applications vary widely across organizations, modern enterprise applications share the following attributes:

- They are component-based for flexibility and scalability.
- They require lifecycle support, including design, development, management and analysis.
- They require more sophisticated database architectures.
- They are developed by teams.
- They are distributed in nature, integrated with disparate back-end systems.

To meet these requirements, an enterprise application architecture must include intelligent application partitioning, modular and reusable components, scalability, cross-platform client support, and open interoperability with custom and packaged applications. Recently, Microsoft introduced the Windows DNA architecture. Using the DNA architecture, enterprise developers can build scalable, multi-tier business applications that can be delivered over any network, provide open access to diverse data sources across different platforms, and be freely accessed by any client computing platform. Most importantly, Windows DNA enables organizations to leverage their existing technology infrastructure, while also adopting new technologies (such as the Internet and Web) to meet new business requirements. Developers using Microsoft Visual Studio can build applications based on the Windows DNA architecture.

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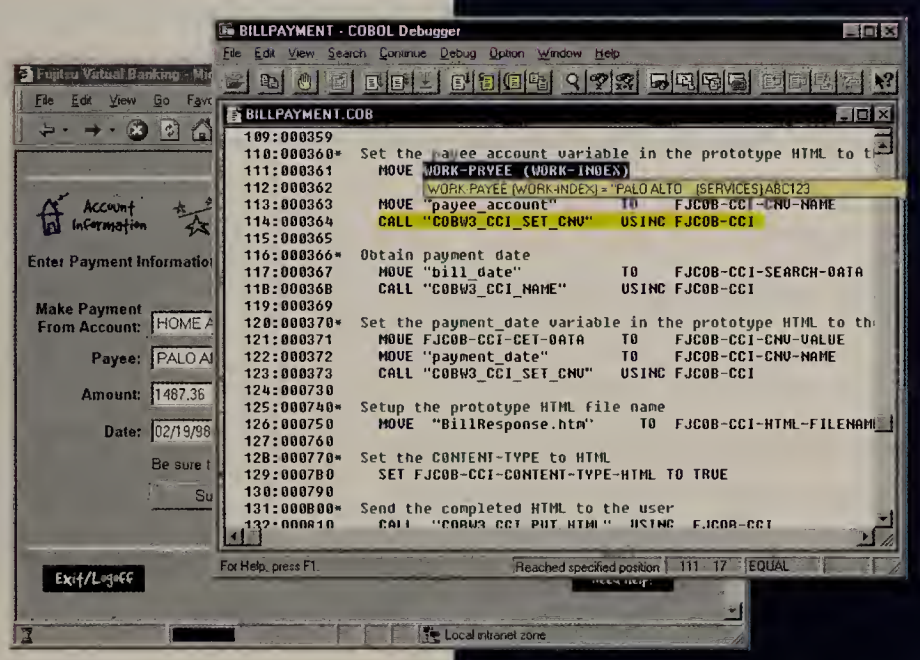

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The Windows DNA architecture provides nine fundamental benefits. They are:

Multi-tier partitioning. Developers can cleanly partition their application into independent layers for user interface, middle-tier business logic and data access. This provides flexibility and modularity so that applications can be easily adapted to changing requirements.

Cross-platform application development. Developers can build thin-client applications that can be delivered to any browser on any platform. They can also build desktop-exploitive applications that take maximum advantage of the Windows desktop operating system.

Universal data access. Applications can access all major database systems, running on any platform, using a simplified, consistent programming model.

Reusable components. All business logic can be encapsulated into reusable Component Object Model (COM) components. COM components can be transparently distributed across middle-tier servers on a network via DCOM (Distributed Component Object Model).

Choice of programming languages. Any programming language can be used to create middle-tier and client-based COM components. This means that developers can choose a language based on their special skillset and/or the technical requirements of a particular component. A COM component created in one language can be easily re-used in any other language.

Integration with thousands of commercial applications. Based on COM, custom business applications can be easily integrated with a wide variety of desktop applications such as Microsoft Office, Visio, etc., as well as with back-end systems such as the Microsoft BackOffice® family, Lotus Notes, SAP, Baan and others.

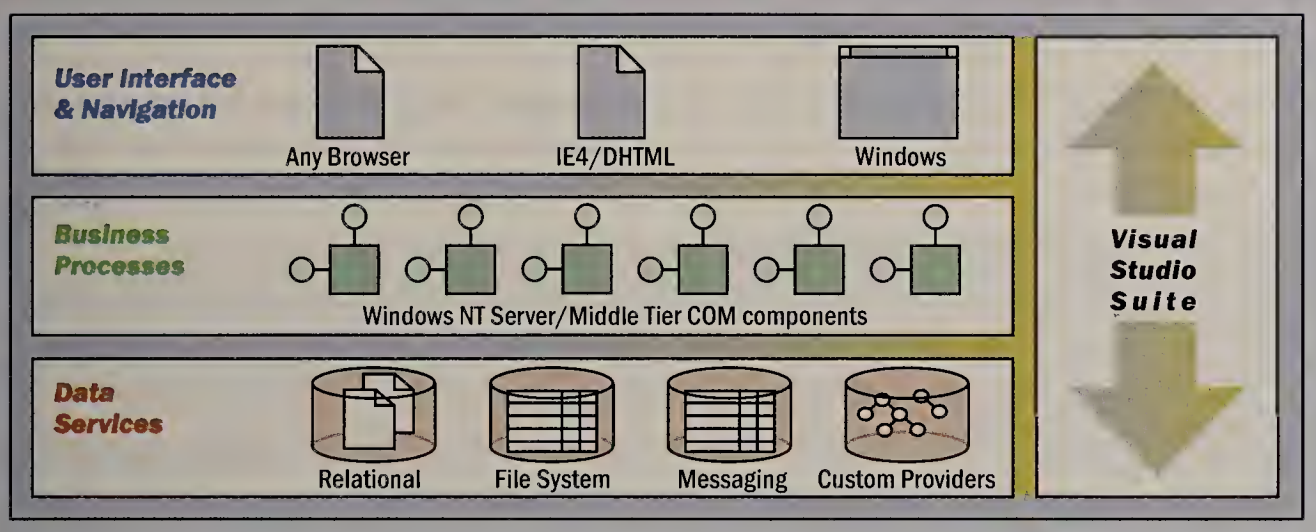
Scalability. Middle-tier business components are run within Microsoft Transaction Server (MTS), which provides seamless support for distributed database transactions based on the XA standard, and thread/resource pooling for servicing thousands of concurrent users. Developers are freed from the underlying programming for XA transactions and thread/resource pooling, in as much as MTS provides these capabilities automatically.

Fault tolerance. DNA applications can be process-isolated from each other, so that if a single application on a server fails, the others remain unaffected. Individual COM components within a single application can also run in dedicated processes for additional fault tolerance.

Support for standards. The DNA architecture is based on Worldwide Web Consortium (W3C) standards such as HTTP, HTML and Dynamic HTML, as well as ECMA standards such as ECMAScript (JavaScript). Other standards fully supported include SSL, SQL, ODBC, LDAP/X.500, TCP/IP, SNA, Win32® API, ActiveX®/COM, SMTP and most other de jure and de facto standards.

Windows DNA is the first architecture to fully embrace and integrate both the Web and client/server models of application development.

A Complete Development Tool Suite



Visual Studio is a complete development tool suite for building enterprise applications for the Windows DNA framework. Windows DNA enables corporations to develop cross-platform applications that can access data sources on any server environment, including Windows NT, UNIX and SNA-based systems.

The Component Object Model

COM is the most widely used component software model in the world. It provides the richest set of integrated services, the widest choice of easy-to-use tools, and the largest set of available applications. In addition, it provides the only currently viable market for reusable, off-the-shelf client and server components.

It's hard to overestimate the importance of COM in the Microsoft environment. COM underlies a large majority of the new code developed for Windows and Windows NT® operating systems, whether created by Microsoft or by others. Here are some facts that illustrate the significance of COM in business today:

- COM is in use on well over 150 million systems worldwide.
- COM consists of a well-defined, mature, stable and freely available specification (as well as a reference implementation) which has been widely tested and adopted worldwide as a de facto standard.
- COM provides the richest set of existing services for applications today, as well as the largest set of development tools available from a wide variety of vendors.
- COM supports the only currently viable component marketplace. The market for third-party components based on COM has been estimated at $670 million in 1998, with a projected 65% compound annual growth rate, growing to approximately $3 billion by the year 2001. (Source: Giga Information Group)
- COM supports thousands of available applications, including all of today's highest volume applications. Microsoft is now providing and supporting COM on UNIX, and major system vendors such as Hewlett Packard, Compaq Computer Corp., Siemens-Nixdorf, Silicon Graphics, SAP and The Baan Co. are providing COM applications and services, with more vendor commitments on the way.

The reason for the broad use of COM technologies is simple: For a tremendously wide range of problems, COM allows the creation of better software.

Visual Studio Suite
to the rescue of developers

Development tools play a key role in the effective use of information technology to build a Digital_Nervous_System. They enable organizations to create, customize and integrate the corporate applications that can turn information technology into a strategic edge.

Visual Studio, Professional Edition enables developers to take full advantage of Microsoft® Windows® and Web development. Visual Studio, Enterprise Edition is a complete suite for rapidly building data-centric enterprise solutions. Its high-end features include enterprise database development and design tools, team development support, application design and performance analysis tools, and development versions of Microsoft BackOffice® family application servers.

Visual Studio 6.0 is the next generation of the Microsoft enterprise development tools suite. This leading-edge development suite delivers the breadth of tools, integration and developer productivity required to meet the needs of organizations seeking to achieve a Digital_Nervous_System.

Visual Studio 6.0 addresses all aspects of Windows DNA application development, including integrated tools for multitier application design, user interface development, middle-tier component development and assembly, database programming and design, performance analysis and team-based development support. The Visual Studio 6.0 feature set is centered around the following core design themes:

- A complete suite of tools for component-based development
- Enhanced lifecycle productivity
- Enterprise database tools
- Enhanced support for teams
- Integration with middle-tier application services
- Developer community and support

Visual Studio 6.0, a complete suite of tools for developing multitier applications based on components, includes:

- ***Microsoft Visual Basic® 6.0 development system***, for rapid development of Windows client/server applications, as well as middle-tier business components.
- ***Visual C++® 6.0 development system,*** the leading C++ tool for building the highest performance applications and components.
- ***Visual J++™ 6.0 development system for Java,*** Microsoft's new visual development tool for building applets, applications and components using the Java language.
- ***Visual InterDev™ 6.0 Web development system,*** an integrated, team-based Web development tool for building Web applications based on HTML, script and components created in any language.
- ***Visual FoxPro® 6.0 database development system,*** for building database applications and developing components using the FoxPro language.

All of these tools are able to create and consume COM components. For example, a COM component created in any Visual Studio tool can be reused by any other tool in the suite. This allows developers to choose a language which is based on the existing skillset in their organization, as well as on the technical requirements of a specific component. No matter which language is chosen, an organization will be able to reuse any component in any other language or tool.

Visual Studio, Enterprise Edition also includes a set of enterprise tools that address a broad range of development lifecycle requirements. These tools are integrated throughout all of the languages in the suite, and include:

Enterprise database tools, including Universal Data Access for connectivity to all major RDBMS systems including Microsoft SQL Server™, Oracle,

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Sybase, DB/2 and most others, as well as new graphical schema design tools for designing tables, relationships, stored procedures and functions on SQL Server and Oracle databases.

Application design and performance analysis tools, including the Visual Modeler 2.0, a UML-based modeling tool for designing multitier applications, and Visual Studio Analyzer, a tool for analyzing distributed applications to quickly locate potential performance bottlenecks.

Team development is a critical requirement for an enterprise development tools suite.

Team-based development features, including Visual SourceSafe™ 6.0 version control system, Microsoft Repository and the Visual Component Manager for managing all aspects of a team-based development project.

Integrated application services, including development versions of BackOffice 4.5 application servers. Integrated application services include database, messaging, transaction, message queuing, distributed processing, Web application services, security and SNA connectivity services.

Enhanced lifecycle productivity

Visual Studio 6.0 supports a broad spectrum of the development lifecycle, including the stages of design, development, application analysis, management and deployment.

Visual Studio supports logical application *design* based on the Unified Modeling Language (UML) via the Visual Studio Modeler, jointly developed by Microsoft and Rational Software. In addition, Visual Studio 6.0 includes physical Web site diagramming/design for Microsoft Internet Information Server and database design tools supporting both SQL Server and Oracle databases.

All Visual Studio 6.0 development tools support rapid application *development*. The tools share a common look, allowing developers to easily capitalize on their knowledge base from tool to tool. All tools support component development and assembly based on COM.

For *application analysis,* the Visual Studio Analyzer allows developers to visualize distributed solutions, understand their structure and component flows, locate problems and isolate performance bottlenecks.

The Microsoft Repository and the Visual Component Manager perform *management* of components written in any language in the suite. Developers can use the Visual Component Manager to publish, catalog and search for components, designs, specifications and other elements of a project to or from the Repository.

Visual Studio 6.0 also offers complete integration with Visual SourceSafe 6.0 for source code version control and for file locking in team-based development scenarios. The Microsoft Management Console, included with Visual Studio, enables organizations to manage COM components at runtime, as well as manage BackOffice servers from an integrated console.

Visual Studio 6.0 includes enhanced build, package and *deploy* functionality across the tools, enabling developers to easily deploy distributed components to staging servers for testing. For runtime deployment, Visual Studio enables components to be packaged for automatic replication via Microsoft Site Server, so staging servers can be easily replicated across many servers in an organization. Microsoft Systems Management Server can also be used to automate deployment of client-side applications and components.

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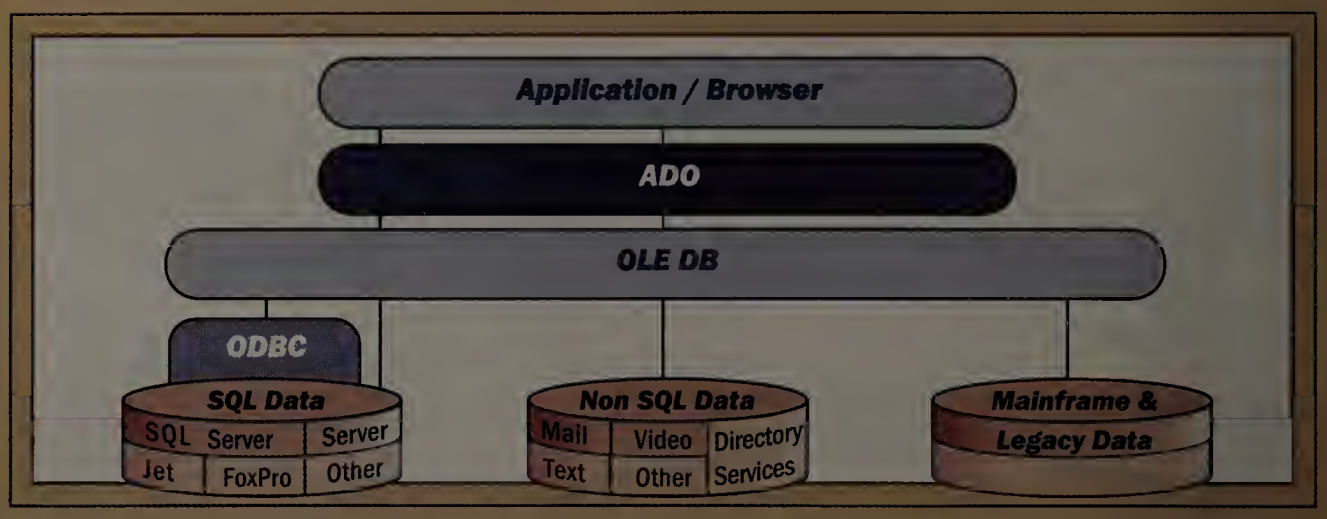
A Universal Data Access Architecture



The Universal Data Access Architecture provides a unified layer of interoperability across multiple, traditional and non-traditional data sources. These data sources can be located on any platform, such as Windows NT, UNIX and SNA-based host environments.

Enterprise database tools

Universal Data Access is Microsoft's strategy for providing fast access to all types of information (including relational and non-relational data) across organizations, from the desktop to the enterprise. Universal Data Access enables all Visual Studio tools to access any data source on any platform. It consists of three technologies: OLE DB, ActiveX Data Objects (ADO) and Open Database Connectivity (ODBC).

OLE DB is Microsoft's system-level programming interface to diverse data sources. OLE DB specifies a set of Microsoft COM interfaces that encapsulate, or hide, various database management system services. OLE DB is designed for non-relational as well as relational information sources on disparate platforms. These include e-mail and file system stores; text, graphical and geographical data; and custom business objects.

ODBC continues to provide standard access to most relational database systems on the market. In addition, the OLE DB Provider for ODBC uses existing ODBC drivers to access relational data.

ADO, Microsoft's high-level interface to data, completely insulates developers from the underlying OLE DB and ODBC technologies. ADO supplies an open, application-level data access object model that allows corporate programmers to write database applications over OLE DB data using any language. All Visual Studio tools can use ADO to access data. Because ADO gives developers access to more types of data than ever before, they will spend far less time writing complex client/server code.

Visual database tools

The Microsoft Visual Database Tools, integrated into all members of the Visual Studio suite, provide extensive support for building data-centric applications rapidly. These tools include:

- ***Data View.*** Connect to and explore any ODBC or OLE DB database.
- ***Query Designer.*** Design, execute and save complex SQL queries.
- ***Database Designer.*** Create and modify Microsoft SQL Server and Oracle database schemas, including individual tables, relationships, indexes/keys, as well as entire database schemas.

►*continued on page 18*

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MSDN RD Program is the Rx for developers

Within the developer community, there is a great amount of peer-to-peer support made available through organizations such as user groups, newsgroups and associations.

One of the most active of the many Windows customer-driven organizations to have popped up is the group known as MSDN Regional Directors. The "RD" program is the heart and soul behind the success of Developer Days.

An MSDN RD is an independent third-party user of Microsoft technology whose mission is to educate and congregate the Windows Development community. RDs are involved in user groups (sometimes driving them), conferences, training, book authoring, product development and providing service and support for their local development community. As seasoned experts in Windows-based development strategies, they are a key force in communicating Microsoft's initiatives and vision for developers worldwide.

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This Regional Directors listing is arranged alphabetically by state.

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Microsoft helps RDs in their local community by providing them with a "direct line" to product groups and information from the source. With this information, RDs have a better understanding of Microsoft and its direction. By combining their real-world expertise with information direct from Microsoft, RDs are better able to evaluate and communicate the benefits of Windows technology in all of their activities. In addition, the relationship benefits Microsoft in that the RDs provide insight and feedback directly from users of the products. There are currently 135 RDs, 38 of which are in North America. The directory below lists these 38 North American RDs, as well as contact information, including e-mail addresses.

To find the Regional Director nearest you, just consult this directory or visit: ***http://www.microsoft.com/devdays***.

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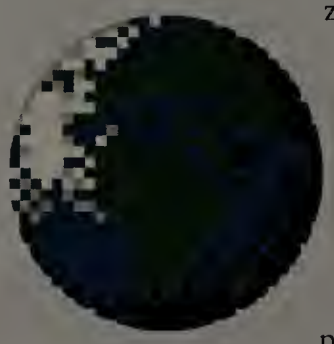
►*continued from page 14*

- ***Stored Procedure Editor.*** Create and edit SQL Server stored procedures and Oracle subprograms and functions using a color-coded editor for T-SQL (SQL Server) and PL/SQL (Oracle).
- ***Stored Procedure Debugging.*** Remotely debug stored procedures on Microsoft SQL Server 6.5 databases.
- ***Database Projects.*** Manage database scripts from a central location, including direct integration with source control.



Enhanced support for teams

Team development is a critical requirement for an enterprise development tools suite. Not only must the toolset support basic team features for networked environments, but it must also accommodate the diverse roles that make up such teams. For example, most intranet and Internet applications are developed by teams that include programmers and non-programmers.

With Visual Studio 6.0, a team-based project model is supported that provides true team development inclusive of the Visual Studio tools targeted at developers and technical architects. Also provided is the Microsoft FrontPage® Web site creation and management tool, which enables content authors and editors to work as integrated members of the project team. Source code control is another team feature integrated throughout the Visual Studio suite. Visual SourceSafe 6.0 enables developers to secure source code, manage revisions and prevent editing conflicts (through file locking) during the development process.

The Microsoft Repository allows component information to be shared—not only by multiple team members, but also by multiple tools. By providing an open extensible framework for storing software components and information about them (such as their methods and data types), Microsoft Repository enables tool interoperability across the application lifecycle. The Visual Component Manager (VCM) makes it easy for teams of developers to share a wide range of component types.

Visual Component Manager's native store is the Microsoft Repository 2.0, allowing components to be stored on either SQL Server or Access databases. The VCM allows many repository databases to be open simultaneously, so a developer can maintain a set of component repositories, for example a personal component repository on Access, a project team component repository on SQL Server and an organization-wide repository on SQL Server.

Integration with application services

The enterprise development toolset must enable middle-tier components to be easily integrated with a rich set of application services required to support diverse application scenarios. Visual Studio provides a set of integrated application services that makes it much easier for developers to take advantage of critical application services such as data access, distributed processing, transactions, message queuing, messaging/workgroup services, security, Web application services and SNA connectivity. These services are provided as programmable COM objects integrated into the development environment. Visual Studio also includes a development version of the Microsoft BackOffice suite of application servers, making it easy to take full advantage of these services from any development workstation.

Summary

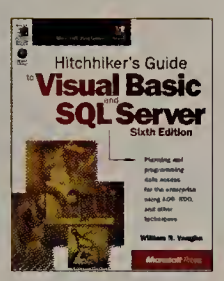
Microsoft's vision for corporate computing encompasses a corporate Digital_Nervous_System to provide free flow of information that empowers corporations to react faster to changing business needs, make more informed decisions, get closer to customers and business partners, and focus on business, not technology. Development tools play a crucial role in enabling corporations to achieve a Digital_Nervous_System.

Microsoft's enterprise development strategy centers on the Visual Studio development tools suite, in conjunction with the Windows DNA framework. Together, Visual Studio and Windows DNA enable organizations to rapidly build well-architected solutions. More information about solutions built using Microsoft Visual Studio can be found on the Web at: ***http://www.microsoft.com/vstudio/***.

New **TOOLS.**

Microsoft Visual Studio 6.0 Enterprise Edition:

Visual Basic
Visual C++
Visual FoxPro
Visual InterDev
Visual J++



New **RESOURCES.**

In today's changing, developing world, the demand for mission-critical enterprise software is gaining momentum every day. That's why there's Microsoft Visual Studio—to give you the tools and technologies you need to keep innovating successfully. And why, to help you unleash the full power and versatility of Visual Studio, we offer you a wide choice of reference books, programming guides, and training materials. Don't just keep up. Set the pace—with learning solutions from Microsoft.

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- Microsoft Visual C++® 6.0 Reference Library
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- Microsoft Visual J++ 6.0 Reference Library
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Briefs

■ **Compaq** *this week will announce a new edition of its ProLiant 5500 server that boasts up to four 400-MHz Pentium II Xeon processors.*

Compaq's *ProLiant 5500 server*

The original 5500 had up to four 200-MHz Pentium Pro chips. The new box is designed to handle high-end enterprise applications and clustering. It can be configured with up to 4G bytes of error-correcting code memory and 512K bytes of cache.

The box has six PCI slots and one shared PCI/ISA slot that can be used to plug in the latest Fibre Channel and SCSI storage devices. The server ships this week. The Xeon-powered ProLiant 5500 starts at $11,701 for a single-processor model.

© Compaq: (800) 392-9299

■ **LANart** *last week introduced a pair of* **stackable hubs** *designed to help companies migrate from 10M bit/sec Ethernet networks to Fast Ethernet LANs. The Needham, Mass., company's 12- and 24-port hubs feature internal bridges to shuttle traffic between 10M bit/sec and 100M bit/sec ports.*

The hubs can be stacked up to four units high to create a stack with a maximum of 96 ports.

The 12-port FTH1220 costs $995 and the 24-port FTH2420 costs $1,595.

Separately, **Allied Telesyn** *has unveiled a line of two-port switches designed to ease network upgrades.*

The AT-FS20x line includes three unmanaged switches for upgrading Ethernet LANs to Fast Ethernet. The switches can also extend Ethernets over longer distances, according to Allied Telesyn.

The switches are priced from $249 to $388 and are available now.

© LANart: (800) 292-1994; Allied Telesyn: (800) 424-4284

NetWare 5.0 packed with futuristic features

Server-side Java, LDAP Version 3 and X.509 certificate support will come in handy — eventually.

By Christine Burns
Provo, Utah

Novell officials are the first ones to tell you they've made significant advances in the company's network operating system with this week's release of NetWare 5.0.

But in the same breath, the officials readily admit that customers are not likely to take advantage of many of the advanced security, Java and directory features in the new release — at least not right away.

Users are unlikely to put these features to use immediately upon installing their NetWare 5.0 servers because there currently is a dearth of applications on the market that can take advantage of these improvements.

Specifically, features included in NetWare 5.0 that the company claims to be ahead of their time are:

- The ability to administer dynamic IP client and host addresses via Novell Directory Services (NDS).
- Support for Lightweight Directory Access Protocol (LDAP) Version 3.
- The capacity to run server-side Java applications.
- The ability for NDS to store X.509 certificates, which are expected to be a key part of customers' public key infrastructure (PKI)-based security schemes.

Novell has included these features in NetWare 5.0 as a way of "seeding the market," says Michael Simpson, Novell director of product marketing.

"Our customers probably won't use these features for quite a while. But if we put them in NetWare 5.0, when customers are ready to use [PKI, server-side Java or LDAP Version 3] in a year or two, we can say 'You're soaking in it!,' " Simpson says.

He contends there is no downside to putting these features into NetWare now because they do not tax the server or affect network performance while inactive.

Will users bite?

Users say they are encouraged by Novell's efforts to lead the industry, even though they are hesitant to deploy all of NetWare's new features.

"It's strange thinking of Novell as actually being ahead of the pack on these new items," says Andrew Smith, a network engineer who manages a 10-server, 2,500-seat NetWare 4.11 network at Olivet Nazarene University in Kankakee, Ill. "I'm so used to Novell playing catch-up that I'm a little nervous when they do something innovative."

Because Smith is planning to upgrade to NetWare 5.0 and use the new native IP support, he is likely to give the NDS-enabled Dynamic Host Configuration Protocol and Domain Naming Server management a try. He also anticipates that the LDAP Version 3 support in NDS will help increase security for remote users accessing the university's network through Netscape Web servers, which also support this latest version of LDAP. Novell officials, however, say LDAP Version 3 clients still must emerge in order for users to really take advantage of the directory access technology.

As for Novell's delivery of server-side Java support, Smith says the technology is useless to him at this point.

"Novell is definitely way out in front of us in the Java field," Smith says. "To date, we do not even have any qualified Java programmers. We get by with static HTML and Perl on the NetWare servers for now."

Another user says NetWare 5.0's advanced features could play a factor in whether his company decides to upgrade its NetWare 4.X network to 5.0

See **NetWare,** *page 20*

AHEAD OF THEIR TIME?

The futuristic additions shipping with NetWare 5.0 next week include:

- The ability to manage IP clients and addresses via NDS.
- Server-side Java Virtual Machine.
- LDAP Version 3 support.
- Ability to manage X.509 certificates using NDS.

"Our customers probably won't use these features for quite a while. But if we put them in NetWare 5.0, when customers are ready to use [PKI, server-side Java or LDAP Version 3] in a year or two, we can say, 'You're soaking in it!' "

Michael Simpson,
Novell director of product marketing

Novell set to launch clustering technology

Novell is putting the final touches on its first NetWare-based clustering product, an offering that the company plans to get out the door by the end of September.

Novell High Availability Server, formerly referred to as Phase One of the Orion project, will provide automatic failover capabilities between two NetWare 4.X servers. This software requires shared SCSI disk space and supports a high-speed Fibre Channel interconnect between the two servers. Existing NetWare applications can run on top of the clustered nodes unaltered.

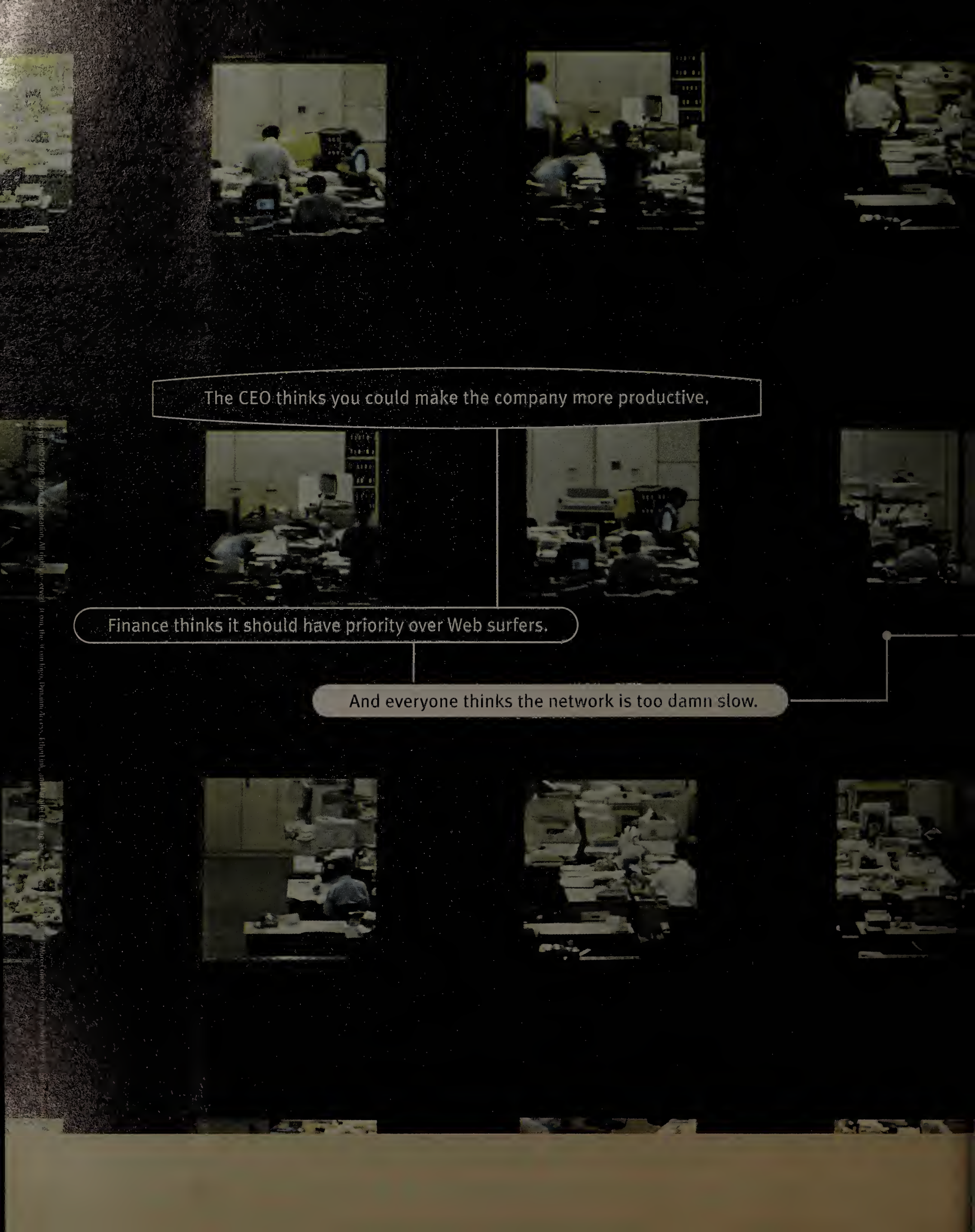
According to product marketing manager Michael Bryant, this software differs from other NetWare-based high-availability products on the market, such as Vinca's Standby Server for NetWare, in that Novell's product supports an active-active configuration. This means that both clustered nodes can be fully operational until a failover situation occurs.

Phase Two of the Orion project will allow multiple NetWare 4.X and 5.0 servers to be clustered for higher system availability and load-balancing purposes.

Novell is expected to make more details about this phase of the project available once the company ships Phase One.

Novell High Availability Server will cost $3,895 for a two-node license.

— Christine Burns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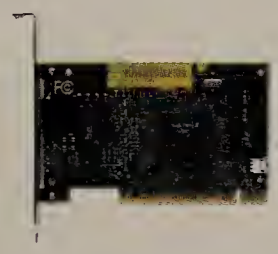

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Seagate ramps up NT backup

Software supports NT 4.0, SQL Server and Exchange networks.

By Christine Burns

Seagate Technology's latest revision of Backup Exec for Windows NT expands users' ability to administer backup and recovery processes across NT 4.0 clients, servers and applications. The revision also adds a centralized management console, integrated virus protection and upgraded agents for Exchange and SQL Servers.

With the new monitoring console shipping in Backup Exec for Windows NT Version 7.2, a network administrator can consolidate administration of backup services running on distributed NT, NetWare, Exchange and SQL Servers as well as all client machines running Seagate's Client Exec.

The new console sits on an NT Server or Windows 95/98 client. Administrators can use it to monitor all scheduled, active and completed backup operations on multiple machines; ensure compliance with company data protection standards; and identify failed or incomplete backup operations.

This new feature is useful because it will allow users to monitor backup and restoration processes at remote sites over wide-area links, says Todd Ryan, systems engineering manager at Pegasus TransTech, a customized imaging software and service provider for the transportation industry in Tampa, Fla.

Version 7.2 also includes Seagate's Working Set Backup facility, which first shipped earlier this year with the company's NetWare-based product. Working Set Backup protects just those files and applications that are used in a normal workday or other user-configurable period of time. By just backing up the "working set" of data, administrators can bring a downed system online much faster because there is less information to restore, says Mike Ivanoff, Seagate's product line manager.

Also included in the new version is integrated virus protection, a feature that scans NT servers for infected data. If an infected file is found, Backup Exec for NT cleans the file prior to backing it up.

Additionally, Seagate has beefed up its backup agents for Microsoft SQL Server and Exchange Server, giving network administrators more granular control over how data is backed up and retrieved. These new agents let an administrator pinpoint specific SQL tables for backup and restore procedures. On the Exchange side, users can now specify that all Exchange mailbox attributes, such as calendars, contacts, notes and task list, are backed up.

✆ Seagate: (800) 327-2232

BACKUP EXEC FOR NT SERVER 7.2

- Single-server license: $695.
- Multiple-server license: $1,395.
- SQL Server or Exchange agent software: $695 per server.

All of the products are available now.

Server vendors find role in thin-client market

By John Cox

The key to Windows thin-client devices may not be the actual desktop computers, but rather the servers behind them.

Server vendors have begun announcing hardware and software tailored for thin-client environments based on Microsoft's Windows NT Server 4.0, Terminal Server Edition (TSE) software and Citrix Systems' MetaFrame software. The Microsoft and Citrix software lets the servers run applications that can be simultaneously accessed by end users working at terminals.

NCR next month will release PerforMunt, a wizard-based program for tuning TSE servers. The software balances users' sessions across CPUs in a machine. The program is part of NCR's Multiuser NT ProPack. ProPack enters beta testing this month; pricing has not been announced.

"We see this server market as a very large opportunity," says Laura Staley, senior product manager for NCR's Enterprise NT Business Group. "It's already broader than just replacement of mainframe and Unix terminals."

Separately, Network Engines announced it is shipping the ThinClientEngine, a server that can have up to 10 400-MHz Pentium II processors. The servers boast 512M bytes of RAM, two 9G-byte SCSI disk drives and two 10/100M bit/sec Ethernet connections.

A browser-based management tool, ClusterDirector, lets administrators monitor thin-client nets anchored by the Network Engines machines. A typical base configuration for a server with a pair of Pentium II processors costs $19,460.

Meanwhile, Data General has unveiled its TermServer-in-a-Box package, which is based on the company's new Aviion AV 2700R rackmount server. The package is a preassembled and pretested collection of server and storage technology bundled with Microsoft's TSE and Citrix's MetaFrame software. Each 2700R server can have one or two 400-MHz Pentium II processors, 512K bytes of Level 2 cache memory and up to 1G byte of fast, 100-MHz memory.

Data General estimates a configuration supporting 200 users will cost $60,000.

✆ NCR: (937) 445-5000; Network Engines: (781) 961-4400; Data General: (800) 328-2436

NetWare

Continued from page 17

or move to Windows NT Server 5.0.

"PKI and LDAP Version 3 support in NetWare 5.0 will definitely factor into our decision because we could actually use those features fairly soon," says Tom Ferris, a network consultant with a Washington, D.C. financial firm he asked not to be named.

But server-side Java is not a draw for the financial firm because of the lack of applications available to take advantage of the technology, he says.

And while IP client and host address management benefit from NDS integration, he says it's unlikely the bank will take on the expense of ripping out and replacing its existing Unix-based IP management scheme any time soon.

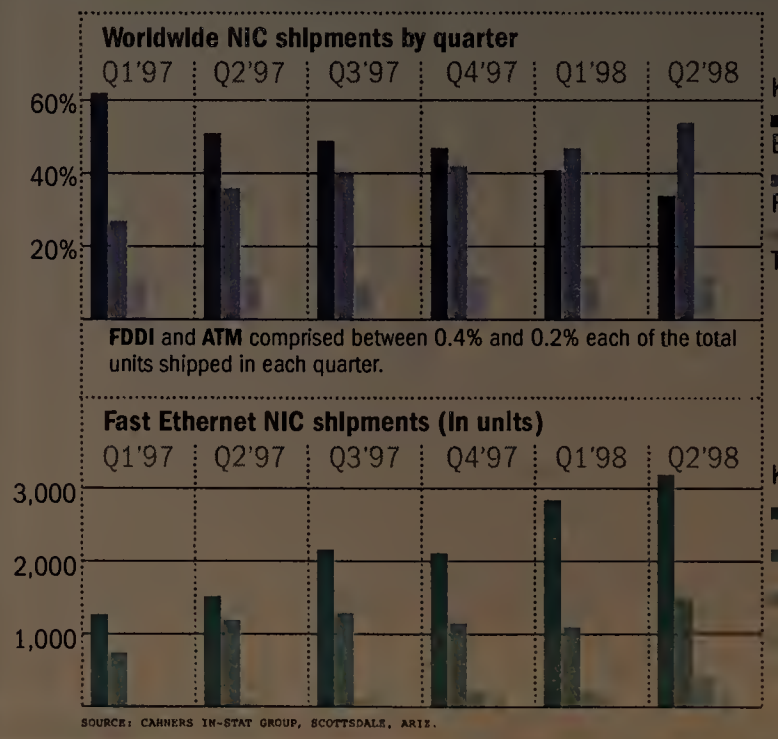
Todd Chipman, an industry analyst with Santa Clara, Calif.'s Giga Information Group, says Novell's "seeding" technologies will likely have little impact on NetWare 5.0 sales.

"These extras will be nice to have at some point way down the road," he says. "But the bottom line for NetWare 5.0 sales is going to be the native IP support and things like memory protection that will help make these NetWare 5.0 machines better for running business applications. That's the type of thing Novell should be pushing." ■

Get more online:
Our review of NetWare 5.0.
A look at NetWare user loyalty.
Forums about NetWare and NT.
8739
nwfusion

3COM AND FAST ETHERNET: NIC CHAMPIONS

Customer migration from Ethernet to Fast Ethernet is fueling growth in the worldwide network interface card market, which experienced an 8.1% sales increase and 7% unit shipment rise from Q1 to Q2, according to a recent Cahners In-Stat Group study. Traditional NIC market leader 3Com is dominating the fast-growing Fast Ethernet market with products such as its Fast EtherLink Server NIC (pictured below), and that's helped the company retain its lead in the overall NIC market.



SOURCE: CAHNERS IN-STAT GROUP, SCOTTSDALE, ARIZ.

3Com Fast EtherLink NIC

NIC market share leaders for Q2 1998:

3Com	42.5%
Intel	14.8%
D-Link	8.3%
IBM	6.4%
Accton	4.7%

11.7 million total units shipped.

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WIRED WINDOWS

Microsoft's case of 'feature creep'

We can all sleep better tonight. Yes, I've finally figured out why Microsoft is taking so long to get Windows NT 5.0 out the door.

Back when I was an IT manager, I had three programmers working for me who created all of our in-house software. While working primarily on database applications, these programmers also devised business productivity applications. During the building of these programs, we came upon a phenomenon we labeled "feature creep."

Generally, the life cycle of an application began with a programmer and the eventual owner of the software getting together to outline what the application should look like and what sources would input data to the application. The programmer would devise a flow chart for the application, and then sit down with me to see if there were areas where we were duplicating effort and to identify any new tools that might have an impact on our new program.

After that, the programmer would design a story board of screens showing their general layout and the logic flow. Once the owner signed off on this, an alpha version of the product would be written and given to one or two of the eventual end users to test functionality. With their feedback, a beta version would be created and tested by more people.

It was usually during the beta period that end users or others with an interest in the application would start to say things that usually began with the words "If only . . . ." Just one little change would make the application so much easier to use or accessible to more people, they would say. Each of these changes would mean a new beta or alpha version leading to more what ifs.

Dave Kearns

We eventually learned to draw the line and say, "This is the final functionality of this revision of the software." Any other suggested changes would go into the hopper for consideration in the next revision. People didn't like this system, but it did tend to focus them better when first specifying the application.

Looking at NT 5.0, it now appears Microsoft is a victim of feature creep. Features such as Distributed File System, Distributed Link Tracking, Certificate Wizard — even Active Directory — were not part of the original specification released more than three years ago.

It's got to be feature creep holding up the release. Either that or NT 5.0 is so big and unwieldy that no one at Microsoft understands how to put it all together.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

Tip of the week

My favorite Web-based database tool, Allaire's Cold Fusion, is about to get an upgrade. Version 4.0 promises big improvements in scalability, rapid deployment and security. New scalability features include support for server clusters with load balancing and failover capabilities. New productivity features include visual programming tools, better team development services and remote interactive debugging. Get all the details at www.allaire.com.

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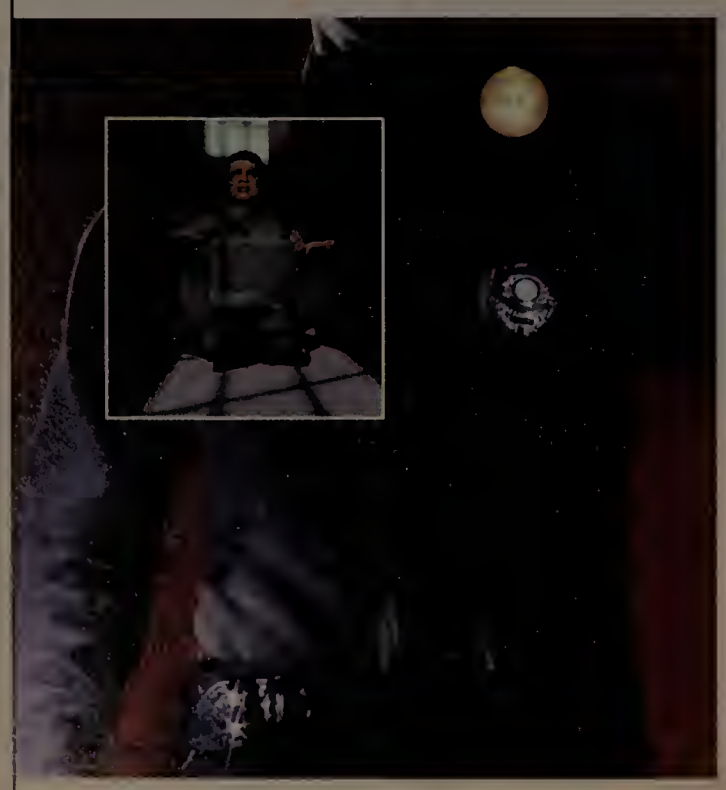

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Briefs

Applied Computer Technology *(ACT) has announced the latest edition of its* **SNA Development Test Facility** *(SDTF) software package. SDTF provides tools for testing and evaluating SNA hardware and software products.*

Among the new features, the package contains an SNA LAN utility to check connection problems and node responses in Ethernet and token-ring nets; an SNA client simulation system to test gateway, router and frame relay access devices; and a 5250 PU2.1 banking applications tool that re-creates banking transactions for examination.

SDTF is shipping now and ranges in price from $10,000 to $34,000.

©ACT: (972) 271-6550

IBM *last week announced the* **V.90 PC Card Modem** *with XJACK Connector for Microsoft Windows 95, 98 and NT 4.0 workstations.*

The card is a full-function V.34 PCMCIA adapter offering V.90 and x2 download capabilities. The card also offers data/fax features. The V.90 PC Card Modem comes with a CD-ROM disk that provides a set of Internet tools, including antivirus, Internet access and browser software.

The adapter will be available Sept. 22 for $179.

©IBM: (800) 426-4968

Esker Software, *which recently merged with Teubner & Associates, has announced a new version of its* **Web-to-host connectivity product,** *Esker PLUS V.3. The software now supports Java clients and the Lightweight Directory Access Protocol, which lets users set authentication and application access privileges.*

A 20-user license costs $10,000.

©Esker: (405) 624-8000

Cabletron expands high-speed router line

New SmartSwitch Routers grow desktop, high-density backbone offerings.

By Jim Duffy
Rochester, N.H.

Cabletron's new routers are designed to let users cost-effectively extend high-speed routing services from the backbone to the desktop at prices that fall well below the competition.

Cabletron has rolled out SmartSwitch Routers (SSR) 2000 and 8600. They represent the low end and high end, respectively, of Cabletron's SSR family, which until now consisted of only the SSR 8000.

The SmartSwitch Router 8000, which Cabletron obtained from its purchase of Gigabit Ethernet start-up Yago Systems (*NW,* Jan. 19, page 8), now fills the middle of the SSR line.

All members of the SSR family will go up against offerings from Cisco, 3Com and Nortel. Cabletron claims it can offer Gigabit Ethernet at $125 less per port than the cost of products from these vendors.

Widespread support

All the SSRs support IP and IPX routing at Layers 2, 3 and 4, and comply with the IEEE 802.1p and 802.1Q standards for priority and virtual LAN tagging. They also support standard routing protocols such as the Routing Information Protocol, Open Shortest Path First and the Border Gateway Protocol, as well as Remote Monitoring and RMON 2 statistics collection for standards-based diagnosis. This means users can ostensibly interoperate with any other vendor's device that supports the same standards.

The new SSR 8600 is a 32G bit/sec switching router targeted at enterprise backbone applications. It sports a 16-slot chassis for LAN interface port modules, and can support up to 120 10/100M bit/sec Ethernet and 30 Gigabit Ethernets ports.

The 8600 switches 30 million packet/sec, is fully redundant and includes hot-swappable switching fabrics, Cabletron says. The company will add dual-port High Speed Serial Interface modules, and dual- and quad-port serial boards to the SSR 8600 in the fourth quarter.

In the future, the SSR 8600 will support ATM and SONET interfaces, Cabletron says.

SmartSwitch Router roundup

Additions to Cabletron's SmartSwitch Router line:

SSR 8600

- High-density router for enterprise backbones
- 32G bit/sec, 30 million packet/sec
- 30 Gigabit Ethernet and 120 10/100M bit/sec ports

SSR 2000

- Desktop switch for power workgroups
- 8G bit/sec, 6 million packet/sec
- Up to 24 10/100M bit/sec ports and two Gigabit Ethernet uplinks

Competitively, the SSR 8600 will go up against Cisco's Catalyst 8510 and Nortel's Accelar 1200.

The SSR 2000 is a wire-speed routing switch for workgroups. It includes an 8G bit/sec switching fabric and can forward 6 million packet/sec, Cabletron says.

The SSR 2000 comes with 16 fixed-configuration 10/100M bit/sec ports and two expansion slots. These slots can hold eight-port 10/100M bit/sec modules — for an overall capacity of 32 10/100M bit/sec ports — or two-port Gigabit Ethernet uplink modules.

The SSR 2000 is designed to go up against Cisco's Catalyst 8510, 3Com's CoreBuilder 3500 and Nortel's Accelar 1100 switches.

However, Cisco's and 3Com's switches cost more than $10,000, while the SSR 2000 costs less than $9,000 in a configuration of 24 10/100M bit/sec and two Gigabit Ethernet ports, according to Cabletron.

The existing SSR 8000, meanwhile, is an eight-slot, 16G bit/sec switching router for enterprise backbones. The box supports 56 10/100M bit/sec and 14 Gigabit Ethernet ports, and can forward 15 million packet/sec.

Some users are already replacing Cisco routers with the SSR boxes. Injured Worker's Insurance Fund in Towson, Md., is replacing Cisco 3600 and 1600 series routers with up to four SSR 8000s and 8600s in its 3,500-node network.

"I've been a Cisco freak forever," says Troy Brocato, network assistant at Injured Worker's Insurance Fund. "I think that Cisco has got a definite battle on their hands here. It's the slickest thing I've seen since sliced butter."

The only downsides to the SSRs are that Cabletron could provide more detailed documentation on system setup and configuration. The company could respond to service and support inquiries a little quicker too, Brocato says.

"I did have one particular problem with a VLAN situation and it took me about 45 minutes to get in touch with an engineer," Brocato says. "If you're down, that's not going to suffice. If that's a backbone piece, you're talking about a whole company being held at bay."

The SSR 2000 costs $4,995 for a 16-port base unit with power supplies and software. It costs $250 per Fast Ethernet port, Cabletron says.

The SSR 8600 starts at $9,995. It costs $499 per Fast Ethernet port and $2,995 per Gigabit Ethernet port.

Both routers are available now.

✆ Cabletron: (603) 332-9400

QUICK TAKE: MEMOTEC

Memotec makes remote access easier

Memotec has introduced a remote access switch designed to support frame relay and X.25 connections to small branch offices.

The CX 800 switch includes two high-speed and one low-speed serial ports for WAN connections and a 10M bit/sec Ethernet LAN port to connect to a remote office local network.

In addition, the switch includes two analog voice ports to tie in two phone lines. Voice calls can then be carried over the data link to a central site on the corporate network. With a Memotec CX 1000e switch at the central site, the phone calls can be delivered to other phones on the data network using two- to four-digit dialing. The voice traffic can be compressed to 5.8K bit/sec per channel.

The CX 800 box can also route IP and IPX, and supports RIP, RIP2 and OSPF routing protocols. Later this year it will support voice over IP, the company says.

The CX 800 will be available next month and will cost $3,695.

Memotec: (800) 570-6366

Get more online:

- Product details from Cabletron.
- A look at Cabletron's ATM and router strategies.

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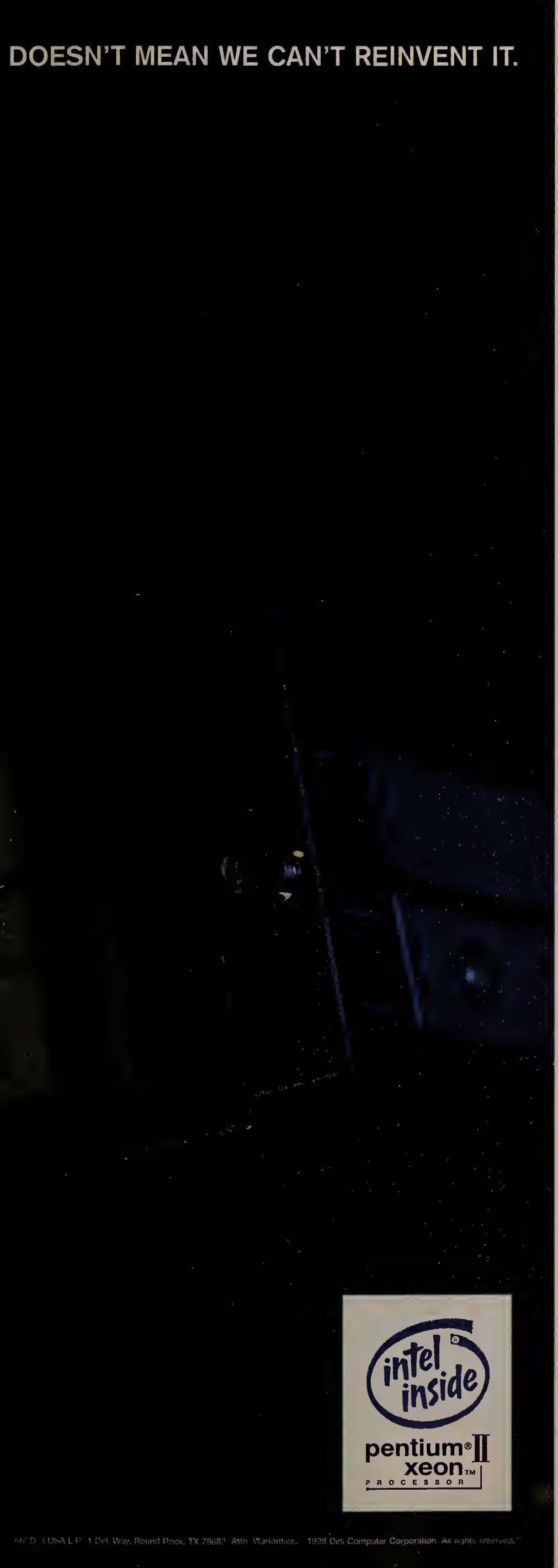

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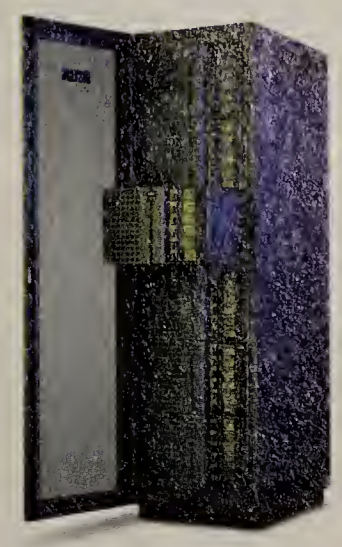

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Perle builds a new, flexible access server

By Tim Greene
Westmont, Ill.

Perle Systems this week will introduce a new remote access server that gives users the option of digital or analog dial-up remote access and the ability to add extra lines as demand increases.

The Perle 833IS is a relatively small server that supports up to eight individual basic rate interface (BRI) ISDN lines, not a full primary rate interface ISDN line, which is the equivalent of 23 BRIs.

Competing products, such as the Shiva LAN Rover Plus and Ascend MAX 1800, are fixed-configuration devices, whereas the Perle 833IS has an extra slot for a four-port BRI ISDN card.

Fully loaded, the box can handle eight simultaneous analog calls or 16 64K bit/sec ISDN calls. Each ISDN BRI line provides two 64K bit/sec channels. The 833IS comes standard with ISDN capability. Analog support is extra.

In the 833IS, Perle includes Password Authentication Protocol (PAP) and Challenge Handshake Authentication Protocol (CHAP) security and support for SecureID tokens and Axent security server software. The 833IS also supports NT domain server authentication, allowing users to assign access rights to entire NT domains at once to simplify administration. Otherwise, administrators would have to enter rights for users individually. The 833IS supports Remote Authentication Dial-In User Service server security as well.

The dial-in and dial-out features of the box can also simplify administration by letting desktops share modems, meaning fewer modems and fewer phone lines to monitor, according to Sean Sullivan, network administrator for Facquier Bank in Warrenton, Va. For remote access, the bank uses a larger Perle access box, the 833AS, which has similar features.

PERLE 833IS PROFILE

- **Support for eight or 16 simultaneous dial-in users.**
- **Includes 56K bit/sec modem and ISDN connections.**
- **Supports callback, PAP and CHAP security, RADIUS, NetWare Bindery/NDS, SecureID and Axent DSS.**

The ISDN and analog capability allows remote users with ISDN to make high-speed connections but also allows roving users to connect via analog lines, which are more readily available to mobile laptops, Sullivan says.

The 833IS also offers the option of a 10/100M bit/sec Ethernet or a 4/16M bit/sec token-ring LAN port.

To make access simpler for remote users, the box can be configured to group all lines under a single phone number, allowing users to connect if any of the 16 possible channels is free.

The 833IS costs $5,995 and will be available next month. A one-year warranty includes free telephone help desk, free software upgrades, and replacement within one business day if the box fails.

✆ Perle: (800) 467-3753

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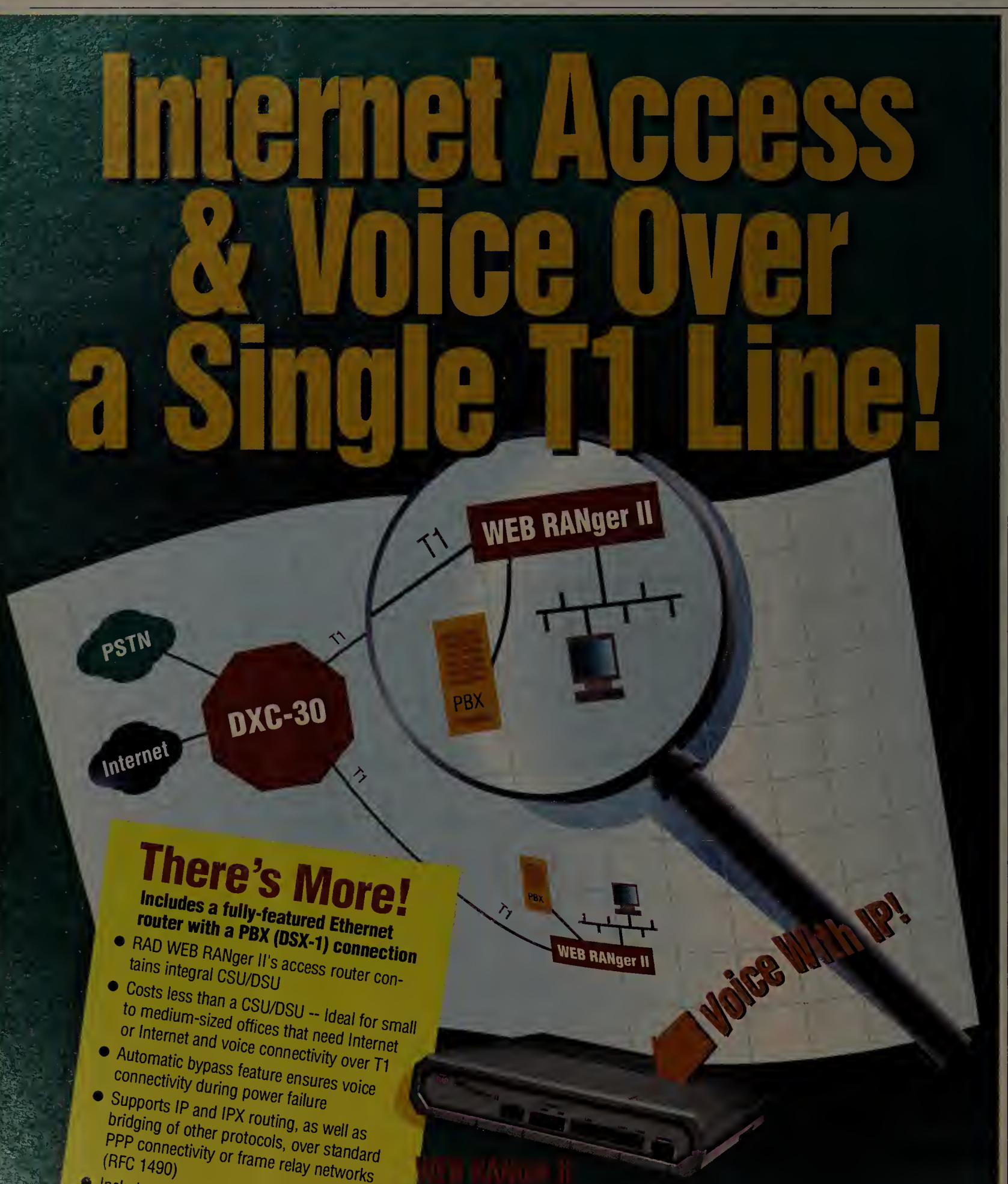

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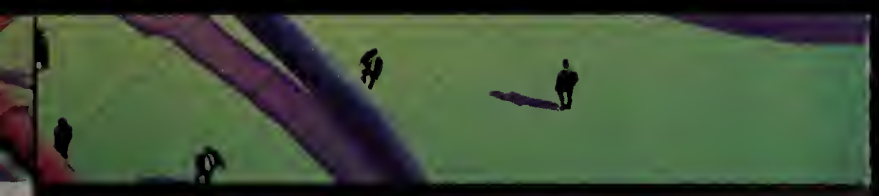

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DAVID C. NAGEL,
Chief Technology Officer, AT&T; and President, AT&T Labs

...examines the challenges network providers and managers will face in creating the supernetworks of the next century in **"The 21st Century Network."**

Friday, October 2:
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- **A Penny for Your Thoughts, but $20 Million for First Round Financing** — Powerful venture capitalists tell which new technologies they're betting on. *Moderated by: Stewart Alsop, Partner, New Enterprise Associates*
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Thursday, October 1	10:00 AM-5:30 PM
Friday, October 2	10:00 AM-4:00 PM

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Newbridge to boost voice capabilities

By Tim Green
Kanata, Ontario

Newbridge Networks plans to strengthen its voice offerings with technology from its recent acquisition of Castleton Network Systems.

By purchasing Castleton last week, Newbridge gains engineers who specialize in voice over IP and frame relay, according to Newbridge Chairman Terry Matthews. This will let Newbridge integrate voice capabilities into its switches, he says.

Currently, Newbridge resells the Castleton AN 600 as the Newbridge MainStreet 3608, requiring users to have a separate box if they want voice-over-frame relay or voice-over-IP capabilities.

With the purchase of Castleton, Newbridge gains more expertise in voice over frame relay than in voice over IP, at least initially, according to John Coons, an analyst with Dataquest in San Jose, Calif. "IP is more of an afterthought. Castleton is used to a simpler permanent virtual circuit environment," he says.

But the purchase fits well with Newbridge's announced plan to focus more on enterprise customers that want to run voice over data networks, according to Ray Keneipp, an analyst with Current Analysis in Sterling, Va.

As it stands, the AN 600 can be configured to encapsulate voice, fax and data for transmission over frame relay or IP networks.

PROFILE: CASTLETON NETWORK SYSTEMS

Based:	Burnaby, British Columbia
Founded:	June 1995
Product:	Frame relay, ATM equipment
Target market:	Web-dependent businesses

With these features, frame relay and IP end points can be interconnected. The device also compresses voice so it takes up 8K bit/sec rather than 64K bit/sec, which is used for a single channel in a voice network.

The deal

Meanwhile, financial details of the buyout were not disclosed. The acquisition is expected to be finalized in the next three weeks.

Earlier this year, the two companies formed a partnership to develop products in the advanced voice and enterprise access markets, Newbridge says.

The Castleton acquisition announcement comes about six weeks after Newbridge's new CEO, Alan Lutz, split Newbridge into three divisions, including one focused on IP and internetworking (*NW*, Aug. 3, page 10).

At the time, Lutz gave each division authority to deal directly with a group of companies known as Newbridge Affiliates.

These are independent companies that work closely with Newbridge in developing technology. Castleton was a Newbridge Affiliate.

The Castleton deal could be part of Lutz's announced plan to expand into new markets to help reach his goal of boosting Newbridge from a $1.6 billion company last year to a $5 billion company by 2002.

✆ Newbridge: (613) 591-3600; Castleton (604) 293-0039

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Essentials of Network Technologies and their Practical Applications

PROGRAM OVERVIEW

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Understand the access and transport technologies, from X.25 through T-Carrier, ISDN, ADSL, RADSL, IDSL, WLL and SONET

Get a handle on LAN networking: Bridges, Hubs, Switches and Routers

Understand Voice over Frame and Voice over IP: Does it make sense to talk over your data network?

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- IS professionals requiring an overview of communications fundamentals and trends
- Nontechnical professionals in the disciplines of law, education, finance, marketing and public relations
- Decision makers seeking a big-picture perspective of broadband and high-performance networks ... in plain English

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B998

1. What is the principal business activity at your location?
(check ONE only)

01. ☐ Manufacturing (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/ Recreation
06. ☐ Media/TV/Cable /Radio/Print
07. ☐ Retail/Wholesale Trade/ Business Services
08. ☐ Transportation
09. ☐ Utilities
10. ☐ Education
11. ☐ Process Industries (Mining/Construction/Petroleum Refining/ Agriculture/Forestry)
12. ☐ Government (Federal/State/Local)
13. ☐ Military
14. ☐ Aerospace
15. ☐ Consulting (Independent)*
16. ☐ Carriers/Interconnects
17. ☐ Internet Service Provider (ISP)
18. ☐ Manufacturing (Computer/ Communications/OEM)
19. ☐ Resellers of Computer/Network Products (VARs, VADs)
20. ☐ Systems/Network Integrators*
21. ☐ Distributors (Computer/ Communications)*
22. ☐ Other *(please specify)* _____

** Please complete form based on largest client.*

2. What is your job function?
(check ONE only)

NETWORK IS MANAGEMENT:
1. ☐ Network Management
2. ☐ LAN Management
3. ☐ Datacom/Telecom Management
4. ☐ IS/IT/MIS/CIO/Systems Management
5. ☐ Internet/Intranet/Electronic Commerce Mgmt., Webmaster
6. ☐ Engineering Management
7. ☐ Corporate Management (CEO, Pres., VP, Dir., Mgr., Financial Management)
8. ☐ Consultant (Independent)
9. ☐ Other _____

3. What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of?
(Please print the appropriate number code on the line next to each product category. Please complete ALL categories A–N.)

1. $100 Million or more
2. $50 Million to $99.9 Million
3. $25 Million to $49.9 Million
4. $10 to $24.9 Million
5. $1 to $9.9 Million
6. $100,000 to $999,999
7. $50,000 to $99,999
8. Under $50,000
9. None of the above

A _____ Large Systems *(Mainframes/Minis)*
B _____ Desktops *(Micros/Leptops/Workstations)*
C _____ Servers
D _____ LANs
E _____ WAN Equipment
F _____ Carrier Services
G _____ Internetworking
H _____ Internet
I _____ Intranet
J _____ Extranet
K _____ Remote Access
L _____ Peripherals
M _____ Software
N _____ Service/Support

4. What is the total number of sites for which you have purchase influence?
(check ONE only)

1. ☐ 100+ 2. ☐ 50 – 99 3. ☐ 20 – 49 4. ☐ 10 – 19 5. ☐ 2 – 9 6. ☐ 1 7. ☐ None

5. What is the total number of Servers/Clients/LANs installed/planned at your location/ in your entire organization?
(check ONE box in each column)

	SERVERS		CLIENTS		LANS	
	At Location (A)	Entire Org. (B)	At Location (C)	Entire Org. (D)	At Location (E)	Entire Org. (F)
1.	☐ 50,000+	☐	☐ 50,000+	☐	☐ 50,000+	☐
2.	☐ 10,000 to 49,999	☐	☐ 10,000 to 49,999	☐	☐ 10,000 to 49,999	☐
3.	☐ 1,000 to 9,999	☐	☐ 1,000 to 9,999	☐	☐ 1,000 to 9,999	☐
4.	☐ 100 to 999	☐	☐ 100 to 999	☐	☐ 100 to 999	☐
5.	☐ 50 to 99	☐	☐ 50 to 99	☐	☐ 50 to 99	☐
6.	☐ 10 to 49	☐	☐ 10 to 49	☐	☐ 10 to 49	☐
7.	☐ 1 to 9	☐	☐ 1 to 9	☐	☐ 1 to 9	☐
8.	☐ none	☐	☐ none	☐	☐ none	☐

6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check one only)
1. ☐ Corporate/Enterprise
2. ☐ Department
3. ☐ None

B. Involvement (check ALL that apply)
1. ☐ Create Network Strategy
2. ☐ Recommend/Specify
3. ☐ Approve
4. ☐ Evaluate
5. ☐ Determine the Need
6. ☐ None

7. What is the estimated number of employees at your location/in entire organization?
(check ONE in each section)

A. At your location:		B. Entire organization:	
1. ☐ Over 20,000	5. ☐ 1,000 – 2,499	1. ☐ Over 20,000	5. ☐ 1,000 – 2,499
2. ☐ 10,000 – 19,999	6. ☐ 500 – 999	2. ☐ 10,000 – 19,999	6. ☐ 500 – 999
3. ☐ 5,000 – 9,999	7. ☐ 250 – 499	3. ☐ 5,000 – 9,999	7. ☐ 499 or less
4. ☐ 2,500 – 4,999	8. ☐ 249 or less	4. ☐ 2,500 – 4,999	

8. Please indicate the products/services that you are currently involved in purchasing or plan to purchase:
(check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

INTERNET/INTRANET

A	B		A	B		A	B	
☐	☐	01. Internet Services/Web Hosting	☐	☐	07. Voice/Video Over IP	☐	☐	12. Web Browsers
☐	☐	02. Firewalls/Security/Encryption	☐	☐	08. VPN Equipment/Services	☐	☐	13. Intranet Applications/Groupware
☐	☐	03. Web Servers/Software	☐	☐	09. Legacy Integration Tools (Web to Host)	☐	☐	14. Search/Retrieval Products (web crawler)
☐	☐	04. Web Servers/Hardware	☐	☐	10. Web Development Tools (JAVA, ActiveX, etc.)	☐	☐	15. Electronic Commerce Tools
☐	☐	05. TCP/IP Software				☐	☐	16. Web Authoring Tools
☐	☐	06. Management/Monitoring Software	☐	☐	11. Push Technology	☐	☐	17. Other _____

LOCAL-AREA NETWORKS/ INTERNETWORKING

A	B		A	B		A	B	
☐	☐	18. Local-Area Networks	☐	☐	28. Layer 3 Switches	☐	☐	37. UPS
☐	☐	19. Network Operating System Software	☐	☐	29. Network Storage Devices (NASs, SANs)	☐	☐	38. Network Interface Cards (NICs)
☐	☐	20. Servers	☐	☐	30. LAN Storage/Backup	☐	☐	39. Hubs
☐	☐	21. Print Servers	☐	☐	31. Optical Storage/Backup/ Jukeboxes	☐	☐	40. Intelligent Hubs
☐	☐	22. Routers				☐	☐	41. Stackable Hubs
☐	☐	23. ATM Switches	☐	☐	32. Disk Storage/Backup	☐	☐	42. Bridge/Router
☐	☐	24. Token-Ring Switches	☐	☐	33. Tape Storage/Backup	☐	☐	43. SNMP Network Management
☐	☐	25. Ethernet Switches	☐	☐	34. RAID Storage/Backup	☐	☐	44. Gateways
☐	☐	26. Fast Ethernet	☐	☐	35. Network Test/Diagnostic Tools	☐	☐	45. Concentrators/Repeaters
☐	☐	27. Gigabit Ethernet	☐	☐	36. Cables, Connectors, Baluns	☐	☐	46. Other *(please specify)* _____

COMPUTERS/PERIPHERALS

A	B		A	B		A	B	
☐	☐	47. Thin Clients/Network Computers (NCs)	☐	☐	50. Minis	☐	☐	54. CD-RDM/DVD
☐	☐	48. Laptops/Notebooks/Sub-Notebooks	☐	☐	51. Mainframes	☐	☐	55. Fax/Modem Boards
☐	☐	49. Micros/PCs	☐	☐	52. Workstations	☐	☐	56. Memory/Chips/Boards/Cards
			☐	☐	53. Printers/Network Printers	☐	☐	57. Other _____

REMOTE/WIRELESS COMPUTING

A	B		A	B		A	B	
☐	☐	58. Remote Access Products	☐	☐	61. PCMCIA Devices	☐	☐	63. Cellular Equipment & Services
☐	☐	59. Remote Access Services	☐	☐	62. Wireless Data Equipment/Services	☐	☐	64. Other *(please specify)* _____
☐	☐	60. PDAs						

SOFTWARE/APPLICATIONS

A	B		A	B		A	B	
☐	☐	65. Network Management	☐	☐	75. EDI	☐	☐	B4. Data Warehousing
☐	☐	66. Systems Management	☐	☐	76. E-mail	☐	☐	85. Anti Virus Software
☐	☐	67. Security	☐	☐	77. Desktop Videoconferencing	☐	☐	B6. Multimedia
☐	☐	68. Communications Software	☐	☐	78. Imaging	☐	☐	B7. Yr. 2000 Conversion Software (Y2K)
☐	☐	69. Terminal Emulation	☐	☐	79. Suites/Server Suites (Back Office, etc.)	☐	☐	88. Helpdesk
☐	☐	70. Operating Systems				☐	☐	B9. Web Based Management Tools
☐	☐	71. Applications Development Tools	☐	☐	80. Middleware	☐	☐	90. Directory Services
☐	☐	72. Database Management/ RDBMS	☐	☐	81. Document Management	☐	☐	91. Other *(please specify)* _____
☐	☐	73. Groupware	☐	☐	82. Site Metering Tools			
☐	☐	74. Workflow	☐	☐	83. Computer Telephony Integration (CTI)			

WIDE-AREA NETWORK EQUIPMENT & SERVICES

A	B		A	B		A	B	
☐	☐	92. 56 Kbps Modems	☐	☐	99. xDSL Services/Products	☐	☐	108. Managed LAN/Router Services
☐	☐	93. Under 56 Kbps Modems	☐	☐	100. Diagnostic/Test Equipment	☐	☐	109. Other _____
☐	☐	94. Cable Modems	☐	☐	101. DSU/CSU			
☐	☐	95. Asynchronous Transfer Mode (ATM)	☐	☐	102. PBXs	☐	☐	110. Outsourcing/Systems Integration Services
☐	☐	96. Frame Relay Equipment/ Services	☐	☐	103. Videoconferencing	☐	☐	111. Education/Training Services
☐	☐	97. ISDN Equipment & Services	☐	☐	104. Leased Lines			
☐	☐	98. FT-1/T-1/T-3 Multiplexers/Services	☐	☐	105. Switched Data	☐	☐	112. None of the above (1–111)
			☐	☐	106. Virtual Private Networks (VPN)			
			☐	☐	107. FRADs			

9. Please Indicate the platforms that are currently installed/planned:
(check ALL that apply)

A. Currently Installed B. Planned for purchase

NETWORK PROTOCOLS

A	B		A	B		A	B	
☐	☐	01. TCP/IP	☐	☐	04. Novell IPX/SPX	☐	☐	07. NFS
☐	☐	02. IPv6	☐	☐	05. APPC/APPN/LU 6.2	☐	☐	08. SNMP
☐	☐	03. SNA	☐	☐	06. NETBIOS	☐	☐	09. Other _____

LAN ENVIRONMENT

A	B		A	B		A	B	
☐	☐	10. Gigabit Ethernet	☐	☐	14. ATM	☐	☐	18. FDDI
☐	☐	11. Switched Ethernet	☐	☐	15. Token Ring/Token Ring Switching	☐	☐	19. 100Base-T
☐	☐	12. Fast Ethernet (100 Megabit Ethernet)	☐	☐	16. IP Switching	☐	☐	20. 10Base-T
☐	☐	13. Ethernet	☐	☐	17. Layer 3 Switching	☐	☐	21. Fibre Channel
						☐	☐	22. Other _____

NETWORK OPERATING SYSTEM

A	B		A	B		A	B	
☐	☐	23. Windows NT	☐	☐	27. Novell (NetWare 4.X)	☐	☐	31. IBM (Server)
☐	☐	24. Windows NT/Advanced Server	☐	☐	28. Novell (NetWare 2.X, 3.X)	☐	☐	32. Other *(please specify)* _____
☐	☐	25. Novell IntranetWare	☐	☐	29. Microsoft (LAN Manager)			
☐	☐	26. Novell (NetWare 5.X)	☐	☐	30. Banyan (VINES)			

COMPUTER OPERATING SYSTEM

A	B		A	B		A	B	
☐	☐	33. NT Server	☐	☐	38. Windows 95	☐	☐	43. Digital VMS
☐	☐	34. NT Workstation	☐	☐	39. Windows 98, .9x	☐	☐	44. Macintosh
☐	☐	35. Unix/Xenix/AIX/SCO	☐	☐	40. DOS	☐	☐	45. Other _____
☐	☐	36. Solaris	☐	☐	41. OS/2 Warp	☐	☐	46. None of the above (1–45)
☐	☐	37. Windows	☐	☐	42. IBM MVS/VM/VSE			

10. Which of the following Servers/Clients do you have installed/planned at your location?
(check ALL that apply in each column)

	A. Servers		B. Clients			A. Servers		B. Clients	
Power PC	☐	01.	☐		486, 386, 286	☐	07.	☐	
Power Mac	☐	02.	☐		Sun Sparc	☐	08.	☐	
Mac Other	☐	03.	☐		Risc	☐	09.	☐	
Multiprocessor Servers	☐	04.	☐		Alpha	☐	10.	☐	
Pentium II (PII)	☐	05.	☐		Other	☐	11.	☐	
Pentium/Pentium Pro	☐	06.	☐						

11. Which of the following hardware platforms are installed/planned in your company?
(check ALL that apply)

A - Mainframes (Large Scale)
1. ☐ IBM
2. ☐ Amdahl
3. ☐ Cray
4. ☐ Hitachi
5. ☐ Unisys
6. ☐ Other _____

B - Minis (Midrange)
1. ☐ IBM RS/6000
2. ☐ IBM AS/400
3. ☐ Digital
4. ☐ Tandem
5. ☐ Unisys
6. ☐ AT&T GIS
7. ☐ H-P
8. ☐ Data General
9. ☐ Other _____

C - Workstations
1. ☐ Sun Microsystems
2. ☐ Silicon Graphics
3. ☐ Digital
4. ☐ H-P
5. ☐ IBM
6. ☐ Other _____

12. What is the estimated gross revenue of your entire company/institution?
(check ONE only)

01. ☐ $20 billion or more
02. ☐ $10 billion to $19.9 billion
03. ☐ $1 billion to $9.9 billion
04. ☐ $500 million to $999.9 million
05. ☐ $100 million to $499.9 million
06. ☐ $50 million to $99.9 million
07. ☐ $10 million to $49.9 million
08. ☐ $5 million to $9.9 million
09. ☐ $4.9 million or less
10. ☐ None of the above

13. For which areas outside of North America do you have purchase influence?
(check ALL that apply)

1. ☐ Europe 2. ☐ Asia 3. ☐ South America 4. ☐ Australia 5. ☐ Middle East 6. ☐ None

FORM: 9801

Please indicate the names and job functions of other individuals at your location to whom you would like us to send a copy of **NetworkWorld**

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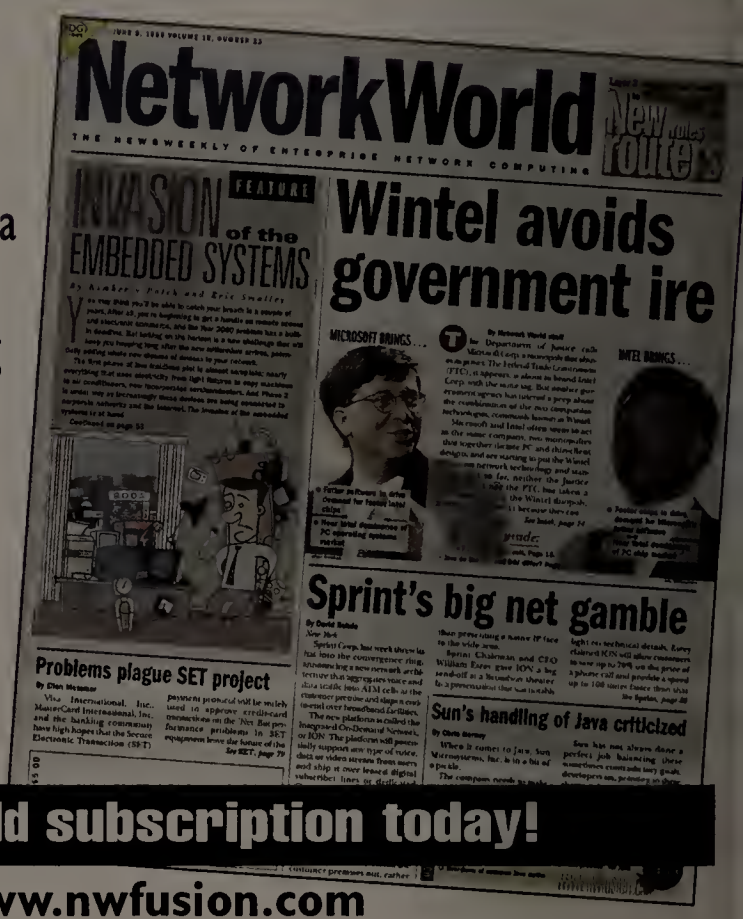

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Briefs

■ **Sprynet** *Internet access customers* **can roam around the world** *— well, in 100 countries at least. Sprynet, an America Online subsidiary, is now offering customers local dial access to the Internet through a partnership with Gric Communications.*

Sprynet customers simply download Gric's dialer off Sprynet's Web site and they are ready for the service. The global roaming feature is available now to Sprynet's 225,000 customers for $3.95 per month plus 10 cents per minute.

© Sprynet: (425) 957-8000

■ **IBM Global Services is capping the usage of its dial-up business Internet access** *service at 100 hours per month starting in January. Users who exceed their 100-hour limit will be charged an additional $1.50 per hour. IBM Global Services now offers unlimited business Internet access, though earlier this year the company capped its consumer services.*

IBM also announced a Premium Plan Internet access service. The Premium Plan includes 12M bytes of e-mail storage, 10M bytes of Web page storage and three e-mail addresses. The service will be available in November for $29.95 per month.

© IBM Global Services: (800) 455-5056

■ **Bell Atlantic** *last week said that it has* **chosen Ascend as its primary supplier** *of ATM and frame relay switches. Bell Atlantic agreed to buy at least $50 million worth of B-STDX 9000 frame relay switches, CBX 500 ATM switches and GX 550 ATM core switches, as well as Navis network management software. Bell Atlantic is in the process of standardizing its data networks across the former NYNEX network and the old Bell Atlantic network.*

Iridium not yet ready for prime time

Satellite system misses launch date, cites testing difficulties and call completion problems.

By David Rohde
Washington, D.C.

The world's first low-earth orbit global satellite calling network will miss its service launch date because of software delays, ground-station operational problems and customer service kinks.

Iridium LLC last week said its long-anticipated Sept. 23 start date for commercial service will be postponed until Nov. 1. The delay means users will continue without a viable option for global roaming services via a single handset for at least a few weeks longer.

The Iridium network, which has been in the works for almost a decade, is a constellation of 66 satellites sitting in fixed orbit about 425 miles above the earth. Employing ground stations and interconnection agreements with cellular and landline carrier networks, calls from Iridium subscribers are beamed up to the closest satellite, then bounced to the nearest satellite above the calling party.

Several competing low- and medium-earth orbit systems — some optimized for voice and paging, others for high-speed file transfers and Web sessions — are on the drawing boards. But most have yet to launch their first satellite, and none are close to commercial activation. By contrast, Iridium completed its satellite network earlier this year.

But last week, Iridium CEO Edward Staiano revealed that the system has suffered a number of problems on the way to service launch.

Call completion and dropped call ratios have not been up to snuff in testing. Call completion reached 87% but dropped dramatically two weeks ago when the satellites received their final software load.

The completion ratio is now back to "the 70% to 80% range" with some 15% of those dropping off before the calls end, Staiano says. He wants the call completion ratio raised to 90% and the dropped call ratio lowered to 5% to 10%, which Staiano says would match the reliability of most cellular systems.

Another problem affecting the system is the fact that only one of the two handset manufacturers has come through with a finished product. Motorola is now delivering its handsets — which are somewhat larger than those of conventional cellular phones and have a special satellite receiver — for a suggested list price of $2,795. The other handset provider — Japanese manufacturer Kyocera — "still needs to eliminate some software bugs," Staiano says.

Also, a number of satellites have failed, and there haven't been enough spares to keep the system whole. In fact, last week Iridium launched five more satellites — two to replace failed satellites and three as additional spares. "We are always going to see satellite failures," Staiano cautions. "They are a fact of life in this business."

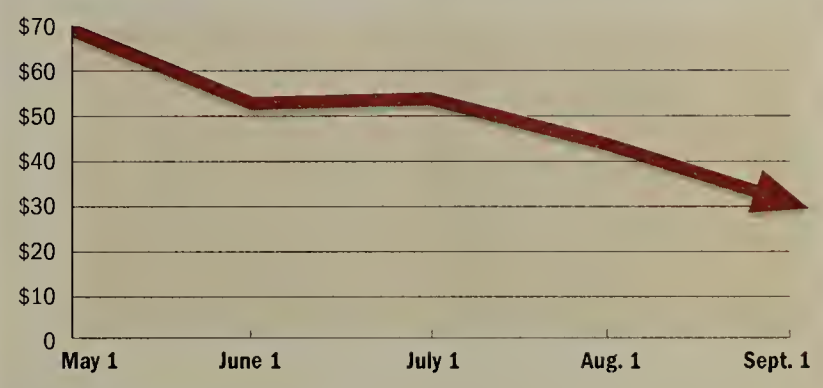
Another problem is the confusion that resulted as Iridium began advertising over the summer but apparently had trouble farming out its services. "We are not satisfied with our ability to respond to customers," Staiano concedes. An Iridium spokeswoman confirmed that the company has roaming agreements with many U.S. wireless carriers but has yet to ink a formal deal to enable any of them to sell the Iridium service.

Iridium's closest corporate relationship in the U.S. is with

See **Iridium,** *page 34*

IRIDIUM TAKES IT ON THE CHIN

As customer trials were delayed and one of the two handset manufacturers fell behind in development, Iridium stock fell more than half from its May high of $72 3/16.



SOURCE: IRIDIUM, WASHINGTON, D.C., AND NASDAQ STOCK MARKET, NEW YORK

A recipe for a new flavor of VPN services

By Denise Pappalardo

Your ISP may be brewing a new class of virtual private network (VPN) services that will couple security, bandwidth management and guaranteed quality of service (QoS), but you probably won't see these services until early next year.

Some ISPs will be turning to Xedia to bring the new VPN services to business users. Xedia's new Access Point QVPN gateways will let ISPs develop VPN services that give users the opportunity to define class-of-service measurements over their virtual network while keeping it secure using 168-bit key encryption and X.509 digital certificates.

Xedia is expected to introduce its Access Point QVPN gateways next month. The devices will integrate IP Security (IPSec); Differentiated Services (Diff-Serv), a pending IETF QoS specification; and class-based queuing (CBQ) bandwidth management parameters, says John Morency, vice president at Renaissance Worldwide, a Newton, Mass., consulting firm.

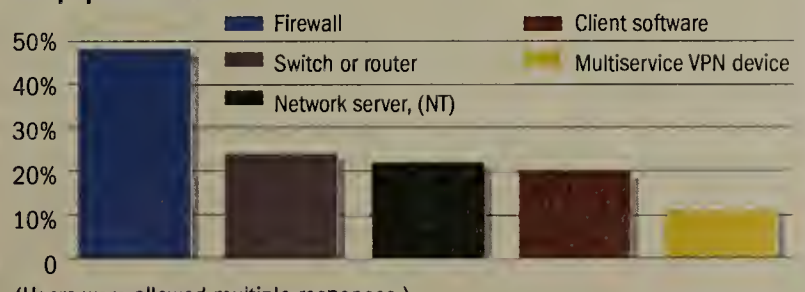
Today, Xedia works with a handful of ISPs, including PSINet, UUNET Technologies and Sprint, but none have committed to deploying the Access Point QVPN yet. But some unidentified ISPs are expected to trial the devices before year-end, one source says.

Access Point QVPN will initially be targeted toward service providers, systems integrators and large enterprise busi-

See **Xedia,** *page 34*

HOW USERS ARE SETTING UP THEIR VPN TUNNELS

Enterprise users are deploying firewalls as the primary means of establishing secure VPN tunnels over the Internet, but other methods are popular as well.



(Users were allowed multiple responses.)
SOURCE: INFONETICS RESEARCH

Lucent switch changes could boost DSL services

Company's new 5ESS central office switch module supports a variety of voice/data network convergence features.

By David Rohde
Lisle, Ill.

A broad new enhancement to one of the most widely installed brands of telephone switches could help big carriers roll out digital subscriber line (DSL) and converged voice-data services to users faster.

That is, if carriers pony up the substantial dollars it will take to install the box.

The carrier-networks unit of Lucent Technologies introduced the Lucent 5ESS AnyMedia MultiService Module (MSM) as an enhancement to the 5ESS central office (CO) switch for local phone companies.

The MSM combines modem-pooling, access concentration and ATM switching features on a set of circuit packs that can be installed directly onto available shelves of the 5ESS switch.

These features are derived from a variety of in-house and purchased technologies. For example, the MSM includes circuit packs that perform the modem-pooling feature of Lucent's PortMaster 4 access concentrator, which was obtained in Lucent's 1997 acquisition of Livingston Enterprises and is favored by ISPs. One shelf on the 5ESS switch — the most widely installed local telephone switch in the U.S. — can support 1,350 modem terminations, says Diane Herr, vice president of product marketing for Lucent's carrier-networks and access unit.

The MSM also includes voice-over-ATM and time-division multiplexer-to-ATM conversion technologies developed in-house and from other acquisitions (see graphic).

A key benefit for the phone companies: eliminating the need to buy separate termination equipment for each new service. For example, with the MSM carriers would no longer need to buy separate DSL Access Multiplexers from independent vendors in order to roll out DSL services from a particular CO.

"Lucent has announced a number of things before that add IP and ATM capabilities," said Michael Arellano, an analyst with Degas Communications Group in New York. "But what the MSM does is put all these capabilities directly on the 5ESS switch module, not on a platform that sits next to it."

Another benefit is improved intercarrier trunking that could bring down the end users' service price.

Local carriers that purchase the MSM will be able to concentrate ATM, IP and other traffic onto the same T-3 trunks going out to ISPs and long-distance carriers, potentially saving 10% to 40% of intercarrier trunking costs that otherwise go wasted because each T-3 is assigned to a different service.

However, carriers buying the MSM will have to pay upfront to get these savings. The modem-pooling feature alone will cost $500 per port, while prices for the other features have yet to be set in advance of the general availability date of fourth quarter 1998.

Arellano also cautions that the integration of these capabilities is only one factor on the road to quicker DSL and converged voice-data services deployment.

Incumbent local exchange carriers such as Bell companies also need long-distance authority and a more assured return on investment before broadly deploying new services, he says.

Another key to the MSM is an additional management-applications upgrade to the 5ESS software. This upgrade allows the carriers' network administrators to perform operations, administration, maintenance and line provisioning for all these services from the same management platform, Herr said.

However, it only works for carriers that have the current Version 12 of the 5ESS operating software. Most new 5ESS carriers have this version, Herr says, while many of the older ones are in the process of upgrading to it for other reasons, particularly Year 2000 compliance. ■

Making acquisitions pay off

The various features of the Lucent 5ESS AnyMedia MultiService Module include:

Feature	Product derived from	Acquisition or business unit obtained from	When acquired
ATM switching	MX 1000 ATM switch	Bell Labs	n/a
Modem pooling	Portmaster 4 access concentrator	Livingston Enterprises	December 1997
TDM-to-ATM adaptation	PathStar Access Concentrator 120	PathStar Access Concentrator 120	May 1998

Iridium

Continued from page 33

Sprint, which is an investor in Iridium's North American subsidiary and holds a contract to provide the company's customer service call centers in the U.S., Australia and the Netherlands.

"We fully expect that Sprint will be one of the sales distributors," says Ted Schell, Sprint's senior vice president for strategy and corporate development. But Sprint doesn't intend to provide Iridium service throughout its Sprint PCS sales channels, which include Radio Shack stores and other outlets. "I don't think you should expect that you will find this in every Radio Shack," Schell says. "It's not something you or I would buy just to drive around and casually talk on the phone."

Instead of launching commercial service, Iridium will begin a beta trial on Sept. 23 with individual users who will not be charged for the phone or airtime. But once service begins, the handset price of nearly $2,800 is likely to be a big stumbling block in signing bulk deals with corporate users.

The Iridium system is an "interesting concept" for Andrew Stratford, vice president for communications systems at Congress Financial in New York. Stratford is now considering upgrades for executives in the U.S. and U.K. to premium cellular services that cut out roaming charges in exchange for a minimum commitment of monthly usage.

"But I cannot see anyone except maybe the Trump Organization who is going to want that pay that kind of expense," Stratford adds. In addition to the upfront equipment charge, Iridium has never set a toll price, but during the past two years, analysts have bandied about figures ranging from $3 to $7 per minute. ■

Xedia

Continued from page 33

ness users. One device can support up to 4,000 simultaneous encrypted tunnels, a source says.

Corporate Technology Group, a Hunt Valley, Md., network integrator, wants to check out Access Point QVPN, says Eric Younkin, director of telecommunications.

Corporate Technology Group is supporting real-time accounting applications for some of its attorney clients, Younkin explains. Adding security to Xedia's bandwidth management features would be a good fit for users who want to keep financial information confidential and for businesses that need to support a lot of remote access users securely, he says.

For the first time, Xedia is supporting the IETF's pending IPSec protocol that defines encryption and authentication parameters for IP traffic. Xedia is using an "off the shelf" IPSec PCI card in Access Point QVPN, one source says.

Xedia is also supporting X.509 digital certificates for user and network authentication. X.509 support will let service providers offer their customers the most secure user authentication available today. Xedia is using Verisign and Entrust certificate authorities to issue, distribute and maintain its ISP customers' digital certificates.

While today business users and ISPs can deploy their own IPSec VPN equipment, they are limited when it comes to integrated QoS features, Renaissance's Morency says.

Xedia's CBQ technology lets users carve out and dedicate chucks of their VPN bandwidth based on traffic type, IP address or URL.

The company's Diff-Serv support lets users mark packets using the type of service (TOS) portion of an IP header. By using standard TOS code points, users will be able to send their traffic as first class, business class or coach across the public Internet when more vendors and ISPs roll out Diff-Serv support.

Initially, Diff-Serv QoS will only be available on Xedia-equipped networks. While Xedia plans on supporting Diff-Serv when its products are available next month, the technology parameters can only work if all routers and switches on the Internet understand the Diff-Serv language. And Diff-Serv development and adoption is not that far along yet.

But as the specification solidifies, analysts believe more ISPs and vendors will roll out support for the QoS technology.

Access Point QVPN is slated for availability by the end of October for $7,795 to $24,995, depending on configuration. Xedia is also developing a QVPN client that will be available next month for $79.

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WAN MONITOR

Targeting a peaceful coexistence

Danny's dad is a nuclear pathologist. He deals with the sort of medical problems about which you never, ever want to hear. Basically, if Danny's dad calls, you're in major trouble.

Good old dad does his job by looking at high-resolution screens all day, finding cancer and other medical hot spots. Trouble is, to do this he had to be right at the hospital because the wonders of remote telemedicine had not yet worked their way into his radiology department.

But now, remote access to computers to send high-resolution images across distances — to allow for midnight consultations, for instance — is enabled via ISDN links from the homes of doctors on call. Trouble is, it's rather pricey, and the doctors are enslaved to whichever location the ISDN links happen to be connected.

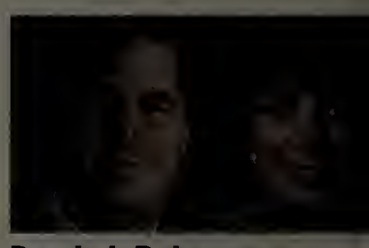
So dad calls and asks why he can't use a cheaper cable modem from the cable company to get access to these files. "Well, you should be able to," smart son says. So Danny talks with the hospital MIS person (who took a year to get the ISDN working), who says that:

- Yes, the computer does have a network interface card and is connected to the LAN.
- Yes, the LAN is connected to the Internet.
- Yes, the program allows for password-protected access over the LAN.

This does not mean it will work with a cable modem, but it should not take a physician to get the ball rolling. The trick is getting people in the MIS and IT groups to think ahead of this curve.

All sorts of applications that rely on ISDN for access can work perfectly well over IP links.

As you are able to get high-bandwidth IP access streams, you should start planning for how you are going to continue to support new and existing applications. If ISDN is costly, do you need to use it? Many of the ISDN-dependent applications now support IP streams. In many cases, they can support concurrent links to both ISDN and IP-access streams.



Daniel Briere
Christine Heckart

Now we're not telling people to rip out their ISDN links and go full-scale IP. In fact, you should keep the ISDN links — just use them for Internet or virtual private network access (IP over ISDN) rather than a single application. We are saying that you should look at those applications that have required ISDN in the past and make sure that's the way you want to support them in the future. Most ISDN applications used ISDN initially because that was all the bandwidth they could get.

And if you're using ISDN to support a remote application right now, consider using IP connectivity via whatever access method best suits your needs.

Using the more ubiquitous IP protocol would provide easy Internet access, while the ISDN link could be used for a wider variety of applications. Remote access gear costs could go down as well. On the down side, there is the potential for reduced performance and security could become a larger issue.

Briere is president and Heckart is vice president of TeleChoice, a consultancy in Boston. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

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Briefs

■ **VeriSign** *has formed a joint venture with French corporations* **France Telecom, Gemplus and Groupe Lagardere** *to provide* **digital-certificate electronic commerce applications** *based on VeriSign public-key technology. The applications will be aimed at firms in central Europe. Jacques Pantin was named CEO of the Paris-based venture, called Certplus.*

■ **TriStarta Security,** *a security start-up launched in June, scored a major coup today by bringing on board the former CEO of SAP America,* **Paul Wahl,** *as its CEO.*

TriStarta's *Wahl*

In joining the 30-employee firm, the German-born Wahl bids "auf Wiedersehen" to the Heidelberg-headquartered SAP, whose flagship product R/3 today accounts for $2 billion in sales. Wahl had been CEO of the American arm of SAP since 1996. He said he joined TriStarta because he is confident the company has solid potential for growth that can be fostered through industry partnerships to market TriStarta's sole product, the Information Security Management System.

■ **Trellix** *of Waltham, Mass., last week began shipping the first upgrade of its* **desktop productivity application** *designed to let nontechnical workers create, maintain and change intranet content. The company claims to have sold a million copies of the software, also called Trellix. Among the new features are tables optimized for HTML, improved conversion of Word documents and the ability to embed data from OLE-compliant applications. Trellix 2.0 costs $249, with upgrades from the initial release priced at $69.*

✆ Trellix: (781) 788-9400

In-Site

Motley Fooling around with electronic commerce

By Sandra Gittlen

Walk into the headquarters of a company that's building one of the World Wide Web's most state-of-the-art electronic commerce sites and you'll be confronted with techies playing pool, screams from someone losing his Sega Genesis game and an array of workers sporting jester hats.

This is The Motley Fool, the country's nouveau online financial advisory firm. While most think of Wall Street pundits as a bunch of buttoned-down suits, employees at this one-time America Online venture are more comfortable in South Park T-shirts and jeans. After all, this is the company that has made its name from being, well . . . Foolish.

Start talking about the future of the company's FoolMart online store and Chief Technical Fool Dwight Gibbs draws you into the company's radio studio/boardroom. In walks Jill Kianka, an MBA from Georgetown University who dodged the traditional world of high finance to create FoolMart, which Gibbs hopes will become one of the company's most profitable endeavors. In fact, Gibbs says that FoolMart sales will account for half of the company's revenue within a couple of years, complementing the revenue pulled in by the company through consulting and other services.

The Motley Fool's *Dwight Gibbs (top) and Jill Kianka are in the midst of a big Web site upgrade.*

But he knows that just selling jester hats, the company's staple promotional item, will not help The Motley Fool reach its financial goals.

The real money is in selling more daily e-mail subscriptions, portfolio tracking software and reports. In order to deliver these products reliably and bill customers efficiently, The Motley Fool has had to embark on a $35,000 Web site hardware, software and bandwidth upgrade. And the company no longer can rely on AOL's electronic commerce infrastructure, given that The Motley Fool created FoolMart after spinning off its own Web site last year.

Taking on a "fool" load

FoolMart has been operating on a single Pentium Pro 200 Dell Server that boasts 120M bytes of RAM and runs Microsoft's Site Server Commerce Edition 2.0. The server has been connected to a similar machine running Microsoft's SQL Server database that is shared by departments across the company.

"Other applications within Fool headquarters, such as application development, were taking up resources on the SQL box," Gibbs says. "This would leave FoolMart begging for resources."

And customers were left waiting to place orders, he adds.

The new system, which is still in the process of being installed, is anchored by a pair of Compaq 3000 servers. One machine powered by a single 333-MHz Pentium II processor and outfitted with 256M bytes of RAM will host Version 3.0 of Microsoft's Site Server electronic commerce software. The machine is linked through a firewall to a dual Pentium II processor box running SQL Server 6.5. The database server is dedicated to housing FoolMart's customer and order databases.

The upgrade to Site Server 3.0 provides the site with better security features, including support for Secure Sockets Layer 2.0 and 3.0.

Also getting a lift is the company's total bandwidth. In order to accommodate the increased traffic on FoolMart and the main site at www.motleyfool. com, Gibbs is

See **Fool,** *page 38*

STAN BAROUH

Hitachi: Fires up TradeLink electronic commerce suite

By Ellen Messmer

Businesses looking to set up electronic commerce Web sites will have more choices with new software from Hitachi Computer Products America.

The company will this week unwrap TradeLink, a suite of electronic commerce applications that will help users set up everything from electronic catalogs for business-to-business trading to online retail malls. TradeLink includes a Payment Gateway for processing credit cards and a certificate server to issue digital certificates. Based on the Object Management Group standard called Common Object Request Broker Architecture 2.0, TradeLink also supports back-end integration with Enterprise Resource Planning (ERP) systems such as SAP R/3 and Baan.

Beta users, such as Bank of America, are using the software to set up home-banking systems. Bank of America is using a component of TradeLink called TPBroker, which acts like a transaction processing monitor for the World Wide Web, ensuring data entered by customers over the Web is correctly processed within back-end systems. "This allows us to have a reliable transaction," says Sukan Makmuri, vice president of Internet banking technology at Bank of America.

The bank intends to expand its online banking services into the area of electronic bill presentment — a way to let the bank's clientele pay its bills online.

Hitachi's *Collet*

According to Mark Collet, director of Internet commerce for Hitachi, the TradeLink suite, available for NT or Unix servers, is flexible enough to be used by any vertical industry whether the user's focus is selling or buying goods.

Collet says TradeLink supports a range of third-party software, such as credit card and tax-calculation software from Cybercash, VeriFone, TaxWare International and TanData. "We also have integration partners that include Deloitte-Touche and TRW," he adds. Typical set-up costs for a full-scale application using the modular component range from $100,000 to about $175,000.

✆ Hitachi: (781)890-0444; Trilogy: (512)425-3128

NET INSIDER

A lighthouse as a metaphor

Jules Verne's last novel, *The Lighthouse at the End of the World,* is about a lighthouse built in 1884 on the island of Isla De Los Estados, which is just east of Tierra Del Fuego at the southern tip of South America.

The lighthouse was designed to warn ships trying to cross from the Atlantic to the Pacific about the dangers posed by the island. The lighthouse was operated by the Argentine military until rough conditions on the island forced the lighthouse's abandonment in 1902.

Scott Bradner

Earlier this year, a French navigator who had read the Verne book as a child completed a reconstruction of the lighthouse in its original location. It took the navigator more than four years to raise the funds, and working with a crew of seven, more than two months to finish construction. On Feb. 26, the lighthouse was donated to the Argentine Navy, which will operate the lighthouse even though it serves no current practical value given the prevalence of satellite navigation systems. Also, because the island is now a sanctuary where the public is not permitted to land, the lighthouse is only viewable from the occasional passing ship. *The New York Times* report on the lighthouse donation quoted an Argentine Navy captain about the "symbolic value of the lighthouse," which he said represented the "dreams of explorers."

What brought this story to mind was a recent *Network World* article on ATM flow control (Aug. 31, page 29). The article described ATM available bit rate (ABR) flow control and included a schematic of a network with ATM to the desktop.

I'm just not sure people should be interested in this topic.

Don't get me wrong. ATM ABR is quite a technical achievement, and if ATM were a common end-to-end network solution, it could be quite important. But few observers think ATM will play a significant role in connecting desktop computers to the rest of the world. The technology is just too expensive and complex for almost all locations. The dim prospect for ATM to the desktop is an important factor here because ATM flow control was designed to function end to end. It is not at all clear how to use ATM flow control with Ethernet or token-ring-connected machines.

Clearly ATM is now, and will likely continue to be, an important technology for WAN services. It could become quite important if the regional phone companies are actually able to deploy inter-local access and transport area ATM services that are distance insensitive.

ABR could be of use in these cases if reasonable ways can be developed to transfer the flow control from the WAN to LAN segments. At this point, I am not sure if all the dreams of the technology explorers that have gone into ABR have produced a symbol of technical achievement with no practical value, like Verne's lighthouse, or if ABR will help support useful ATM-based services.

Disclaimer: Harvard has been claiming to have practical value for a long time but does not have an opinion on ABR.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

Fool

Continued from page 37

boosting the company's pipeline from three T-1s to a fractional T-3, offering between 9M bit/sec and 12M bit/sec throughput. Gibbs says that should be enough to handle the more than one million page requests a day made to The Motley Fool site.

The wisdom of a Fool

No matter what technology a company is using, Kianka says, the key for a company to be successful in electronic commerce is knowing what types of products it is going to be offering and optimizing its infrastructure accordingly.

For instance, if the company is going to sell online products such as e-mail subscriptions and software downloads, the company needs to make sure it has the hardware, software and bandwidth to support them.

The Motley Fool uses a homemade Pentium II machine with 64M bytes of RAM running Linux to generate its more than 60,000 e-mail newsletters, which are created in-house.

"The Linux machine is not even breaking a sweat," Gibbs says. "It's a shame right now we can't put out enough e-mail to push it to capacity."

The Motley Fool used to rely on a third party to do its credit card transaction processing, but Kianka says it was easier and less expensive to bring this task in-house.

What has Gibbs learned from the whole experience so far?

"You have to have multiple disciplines to put together a store," he says. "You need someone who's tech-savvy, but you also need someone who's product-savvy. Trying it any other way would be foolish." ■

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8834

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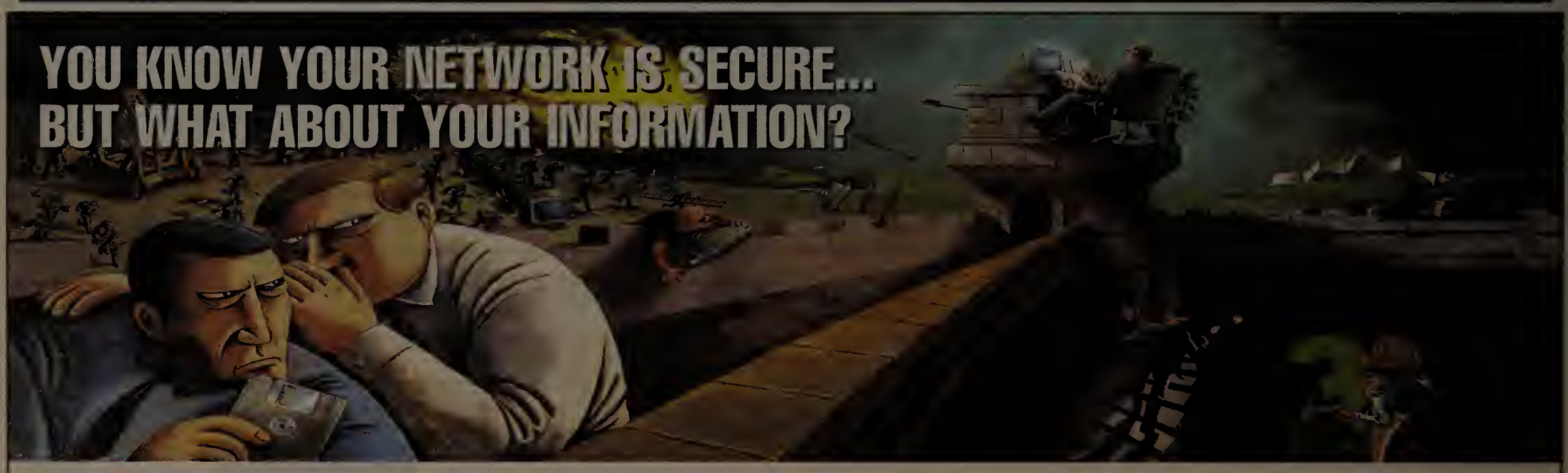

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SPECIAL FOCUS

Year 2000 planning

Making lemonade out of Y2K

While companies rush to become compliant, those prepared see opportunities to gain a competitive edge.

By Paul McNamara

Conventional wisdom holds that the Year 2000 crisis will stop major application deployments cold next year.

After all, who wants to digest the 30 million lines of code in a yet-to-be-released Windows NT 5.0, for example, when those diabolical two-digit dates are still lurking in every corner of the company?

However, there is one problem with that assumption: Some companies have their Year 2000 acts together and have no intention of sitting on their hands next year while competitors flail about to beat the millennium bug.

Prudential Insurance insists it is one of the companies looking to thrive, not merely survive, amid the Year 2000 chaos.

"I happen to use an Albert Einstein phrase that goes, 'In the middle of difficulty, lies opportunity,' " says Irene Dec, vice president of IT for the Roseland, N.J., firm.

Prudential began its Year 2000-compliance project in the summer of 1995 with full commitment from upper management. That support, according to Dec, allowed the company to sustain a steady, productive pace toward meeting the immovable deadline of Jan. 1, 2000.

"From the very beginning we made a decision to outsource approximately 70% of the Year 2000 work," says Dec, who is one of 150 Prudential employees assigned to the Year 2000 project. One reason for outsourcing, she says, is that it has freed up the company's IT staff to focus on new technology important for supporting business initiatives.

While Prudential does not disclose specific product deployments, Dec says the fact that the company is 75% to 80% through a meticulously measured Year 2000 project means the company can take on whatever IT additions make business sense next year.

The push for Year 2000 compliance has already produced tangible benefits that will pay off for Prudential down the road, Dec says.

Prudential's Irene Dec *says her company is looking to wring competitive advantage out of Year 2000 challenges.*

CHRISTOPHER WILE

"What you have is probably the greatest project management challenge that you'll ever have in your life," she says. In learning to cope with Year 2000 compliance, the company has developed more efficient collaboration processes, a useful inventory of software applications and better testing methodologies.

But not every company is comfortably ahead of the Year 2000 curve, of course. A recent survey of 400 IT professionals showed 60% are expecting Year 2000 remediation to have at least a moderate impact on new technology deployments (see graphic). Ensuring that this moderate impact doesn't become a show-stopper is job one, according to one of the nation's largest retailers.

Sears has been plugging away at its Year 2000 project since 1994, says Dennis Grummer, director of the effort.

"Since we have been working on the project that long, we're not in a firefighting mode where we're having to place a lot of additional resources on Year 2000 activity," Grummer says. "We're not behind the eight ball."

As a result, Grummer does not believe Year 2000 work will keep Sears from undertaking other important IT projects in 1999.

"Our objective is to have all of our remediation completed by the end of this year, with testing being performed in 1999," he says. "We're pretty much on track."

It's difficult to determine whether companies like Prudential and Sears are the rule or the exception. Not only do Year 2000 surveys and experts differ in making such assessments, the companies at risk often don't have an accurate handle on where they stand. These realities could lead to false optimism, says Bud Hamilton, a Year 2000 speaker and assistant professor of business strategy at Georgia State University.

"For the firms that already have compliant software and are sitting pretty, now is the time to really go in for the kill," Hamilton says. "There is no better time because some folks aren't going to make it."

However, Hamilton is among those who see more peril than opportunity in dealing with the Year 2000 issue.

"The problem is that in talking to major firms here in Atlanta, I don't know of anyone who says they're ready," he says.

Another expert sharing that view is Karl Feilder, CEO of Greenwich Mean Time, a British company devoted to tackling Year 2000 issues on the desktop. Feilder says even those companies saying they are in great shape are probably delusional.

"Most of the organizations that I have spoken to that tell me that they're nearly finished tend to become depressed about a half an hour later when they realize they didn't bother to check their PCs," Feilder says.

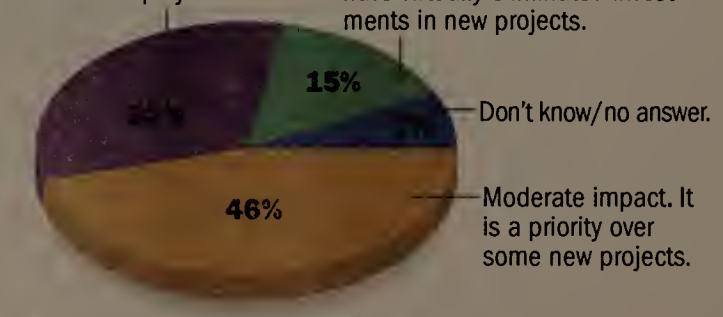
Nevertheless, there will be companies charging ahead with major deployments of complex technology in 1999 — Year 2000 or no Year 2000. Microsoft certainly is counting on that kind of aggressiveness from IT planners when Windows NT 5.0 finally ships.

Companies that are comfortably Year 2000 ready will be "in a position to deploy NT 5.0 and are going to get competitive benefits from that," says Mark Brown, an NT architect at Microsoft. "I would think that is what everybody would be shooting for."

Shooting is one thing. Hitting the target is another. ■

ASSESSING THE FALLOUT

Four hundred managers attending IT Forum in San Francisco earlier this year were asked what impact Year 2000 remediation was having on new development projects in their organizations.



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RON NUTTER'S NETWORK HELP DESK

Ron Nutter, a Master Certified Novell Engineer and Microsoft Certified Systems Engineer in the Lexington, Ky., area, tracks down the answers to your questions. Call (800) 622-1108, Ext. 7476, or send your questions to helpdesk@networkref.com.

After running fine for several years, the hard drive in my company's server crashed. To make matters worse, we can't find the NetWare license disk we used to install the server. We supposedly bought a Compaq SmartStart license, but the dealer had problems installing with that, so the dealer used a license of its own. We've replaced the hard drive, but what do we do about getting a legal NetWare license?

Via the Internet

The reseller that sold your company the SmartStart activation key should still have a copy on file. If it doesn't, you can check with Compaq. It should have the purchase record on file and should be able to give you the license information. As part of the activation process, you register the serial number of the SmartStart pack with Compaq. That number then becomes your NetWare license number.

Compaq recently moved away from shipping encrypted versions of Novell and Microsoft products, meaning you'll need to find SmartStart CDs earlier than Version 4.0 to work with your license disk.

If your company didn't purchase a SmartStart activation key, finding the reseller's invoice might help. Resellers will either register your copy of NetWare for you or list the serial number of the package on the invoice.

Your reseller should be able to quickly procure a replacement of the license disk from Novell. Also, calling Novell's Customer Care Center, at (800) 453-1267 in the U.S., and faxing the invoice you have at hand should help to resolve the situation.

Once you have the replacement license, you might want to place a copy of the license floppy onto a secure area of the server.

Internet fax: low-cost connections for the masses

By John Fleming

When you think of it, faxing is a truly brilliant idea: use low-cost devices attached to the global telephone network to transmit an exact image of any document from anywhere to anywhere.

More than 360 billion pages per year are faxed — to every country, every company and almost every office in the world.

Over the past 10 years, technologies have been developed that have combined computers with telephony. Technologies such as PC fax programs and LAN fax servers have been used to improve fax communications. The latest computer-based technologies are new mechanisms for sending faxes using IP over the Internet or IP fax.

IP fax can be used to describe any system that provides a similar operational model to traditional fax, except that the Internet is used instead of the telephone network for at least some part of the transmission. A number of different technologies and approaches to IP fax are currently being developed and deployed. These include IP-enabled fax machines, new or enhanced transmission and messaging protocols, new software applications and enhanced commercial fax services.

The fax evolution

The protocols, technologies and techniques being used are evolving rapidly. In early 1998, the Internet Engineering Task Force (IETF) and the International Telecommunication Union (ITU) endorsed standards for IP fax interoperability. These can be referenced at the IETF Web site, at www.ietf.org, and the ITU Web site, at www.itu.int.

Traditional fax has a fairly simple usage model. First, the user inserts a document into the fax machine, enters the destination fax number and presses the start button on the machine. The sending fax machine dials the receiving fax machine. If it connects, the sending machine scans the document and transmits the image over the public switched telephone network (PSTN) to the receiving machine. Simultaneously, the receiving machine captures and prints the document. After successful completion, the receiving machine acknowledges the fax was received.

Two primary transmission modes are being utilized in IP fax systems: store-and-forward mode and real-time mode. These modes provide different levels of immediacy, reliability and compatibility with traditional fax devices.

Store and forward is the operational mode of IP fax that has been most widely implemented. In this mode, the entire document is transmitted to a network-based server that stores it and then transmits it to the destination. The actual delivery may involve a series of intermediate staging points. Store and forward is the most reliable operational mode of IP fax because it is able to deal with network latency and packet loss. It can also provide enhanced capabilities such as multi-recipient broadcast, automatic retry and archiving.

The real deal

Real-time IP faxing is similar to traditional fax. Real-time mode allows two fax devices to directly communicate via the standard T.30 fax protocol used in the PSTN to transmit a fax. T.30 is the standard method of establishing and handling the communications between two fax machines.

Real-time mode allows the T.30 protocol to be relayed across the IP network. Today, real-time transmission is often disrupted by network latency and packet loss, which are inherent in the current public Internet environment. Significant efforts are underway by hardware and software vendors and network designers to overcome these limitations so real-time mode can be more widely used. A proposed ITU standard, called T.38, may be endorsed this year. T.38 defines a secure way to set up IP fax transmissions in real time.

IP fax enables a fax document to be sent from one person to another. A fax machine or a computer can be used to send or receive the fax. IP fax also allows e-mail to be used to send or receive faxes. This would enable users to receive faxes anywhere, anytime with an Internet fax address that complements their e-mail address.

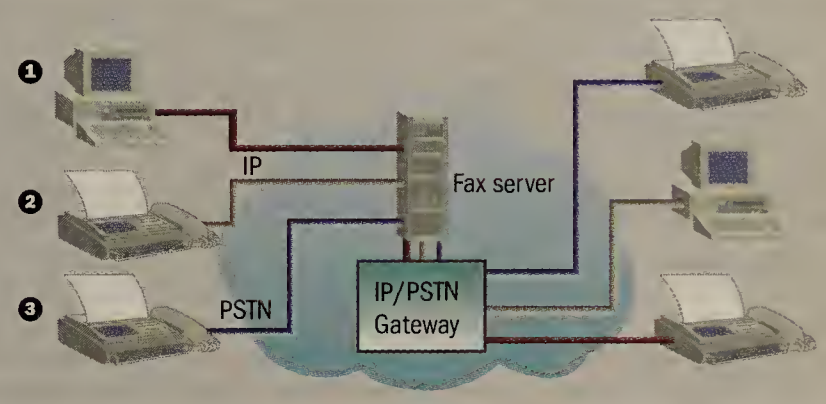
IP fax can also support enhanced fax services such as broadcast, production faxing and fax on demand. IP fax lets users broadcast faxes to multiple recipients. With this capability, they have instant access to thousands of virtual fax machines inside the Internet. Production faxing allows operational systems such as order entry, purchasing or accounts receivable to transmit fax documents. Internet-based fax on demand allows Web sites and call center applications to transmit faxes.

Fleming is vice president of business development at Internet telephony product provider NetCentric Corp. He can be reached at john.fleming@netcentric.com.

UP CLOSE

Internet faxing

Using the Internet to send ubiquitous fax transmissions can save as much as 70% on international fax calls, experts say. IP faxing could account for up to 28% of all fax traffic by 2000, according to researchers. The three models for Internet fax are computer-to-fax, fax-to-computer and fax-to-fax. They work as follows:



1. Computer-to-fax.
Under this model, a user creates a fax using an e-mail client, specialized fax software or a fax print driver. The fax is transmitted using standard Internet protocols to a specialized Internet server called a gateway. The gateway accepts the fax transmission and then dials a traditional fax terminal using the PSTN to deliver the fax.

2. Fax-to-computer.
Lets traditional fax devices be used as the Internet on-ramp. With this model, the fax machine is usually connected to a small device that will redirect the fax to a gateway. The gateway will receive the fax and then forward it to its destination — usually an e-mail account.

3. Fax-to-fax.
Starts with a fax machine connection to a gateway and ends with fax delivery over the PSTN. This model is interesting because it can operate in a store-and-forward mode or in a real-time mode.

EDITORIAL *insights*

Don't miss this gig at NetWorld+Interop Atlanta

The topic is Layer 3 switching. The event is a presidential-style debate among the industry's top vendors. The best and brightest of the internetworking industry will be there. The place is NetWorld+Interop Atlanta.

A couple of weeks ago, I told you about the Layer 3 Switching Showdown *Network World* will be staging on Thursday, Oct. 22 from 10:30 to noon down in the Peach State. I asked 3Com, Bay, Cabletron, Cisco, Extreme Networks, Foundry Networks and Packet Engines to send their top executives to take part in the debate, and they've all risen to the challenge.

Here are your contestants for the Layer 3 showdown:

- 3Com: Mick Seaman, chief technology officer for the Large Enterprise Business Unit
- Bay (now part of Nortel): Basil Alwan, vice president of the Switching Product Division
- Cabletron: Romulus Pereira, vice president, West Coast Engineering
- Cisco: Jayshree Ullal, vice president
- Extreme Networks: Gordon Stitt, CEO
- Foundry Networks: Bobby Johnson, CEO
- Packet Engines: Bernard Daines, CEO

Quite a lineup, eh?

In the first phase of the showdown session, the vendor executives will face questions from *Network World* Senior Editor Jim Duffy, Tolly Group consultancy founder Kevin Tolly and Esmeralda Silva, the highly regarded LAN market analyst with International Data Corp.

Then, I'll let the vendors challenge each other in a back-and-forth Q&A period before we open the floor to audience members. At least three of the vendor participants have taken part in previous *Network World* showdowns (3Com's Seaman, Extreme's Stitt and Foundry's Johnson), and you can be sure they'll be ready to grill their rivals.

There are no formal presentations. There are strict time limits on answers. No marketing spiels. No PowerPoint slides. Just real answers to real questions.

Quite a number of readers have already sent me questions they'd like to ask these vendors, and I hope you'll get in touch with me about the topics you'd like to have us address.

If you're responsible for setting your organization's network infrastructure strategy, don't miss this special session.

John Gallant, editor in chief jgallant@nww.com

Intranet applications • Dale Dowdie

XML: The technology most likely to succeed

Just a few short months ago, Extensible Markup Language (XML) began to take the business community by storm. Here at last was a way to integrate EDI applications with the Web; here was the solution to the problem of managing complex heterogeneous data types and forms while maintaining an open architecture.

XML has caused the term extranet to take on a whole new meaning. The standard allows companies and their business partners to develop separate rules for any data format and manage transactional integrity without complex custom programming. Vendors such as Sun, Microsoft and IBM have begun creating repositories for XML Document Type Definitions (DTD), and the newest versions of Netscape Communicator and Microsoft Internet Explorer include XML parsers.

Now some companies are developing new tools that extend XML's capabilities into Web publishing; others are just taking advantage of the XML standard to create more powerful and integrated Web sites.

For example, UWI.Com (www.uwi.com), a Canadian development company, has introduced an XML-based language called Extensible Forms Description Language (XFDL) for creating online forms for electronic commerce. OpenMLS (www.openmls.com), a company that provides Web-based solutions for the real estate industry, has introduced an XML-based language that allows real estate brokers to maintain and update their information independently and in their own formats.

The Open Financial Exchange (OFX) (www.ofx.net) is developing online financial standards and solutions based on integrating XML into the client and server. With membership that includes banks, financial services companies and software development firms, the OFX is rapidly laying the groundwork for the future of electronic commerce. Meanwhile, the Financial Services Technology Consortium (www.fstc.org) is in the process of creating an XML-based electronic commerce messaging format. The results will make XML the standard for electronic check processing via the Internet.

Last but not least, Microsoft and IBM have developed Document Content Description (DCD), which is a new way of defining XML document structure intended to replace DTD.

The speed with which the industry has embraced and extended the capabilities of XML has stunned even the World Wide Web Consortium XML group. The group is delaying the release of XML 2.0 to allow users to become familiar with XML 1.0 and to incorporate many new capabilities into the 2.0 specification.

In the near future, most Web publishing tools and Web servers will have full XML support, and XML will become the industry standard for server-side processing of forms and electronic commerce transactions. Only the most limited Web sites will use basic HTML.

Web sites that are designed to generate revenue from advertising must have the functionality only available through XML or customized Java applications. Web portals are upgrading their sites to take advantage of XML standards, especially in the area of type definitions for specific searches. Businesses will want to link to or be listed on these Internet portals, and the only way that consumers will be able to find your business will be to utilize XML standards in your Web site.

XML has taken off, much as the Java industry did a couple of years ago. More important, it has what it takes to turn those Java dreams of yesterday into the business and electronic commerce realities of tomorrow.

Dowdie is president and CEO of Intellitech Consulting Enterprises, a Boston-based technology consulting firm. He can be reached at ddowdie@intellitech.net.

MESSAGE

Send letters to numews@nuvw.com or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification

Billing not the problem

Your article "IP economics" (Aug. 10, page 37) states that "IP telephony billing has yet to sort itself out." In fact, the problem lies not in billing for IP telephony but with accounting for IP telephony usage.

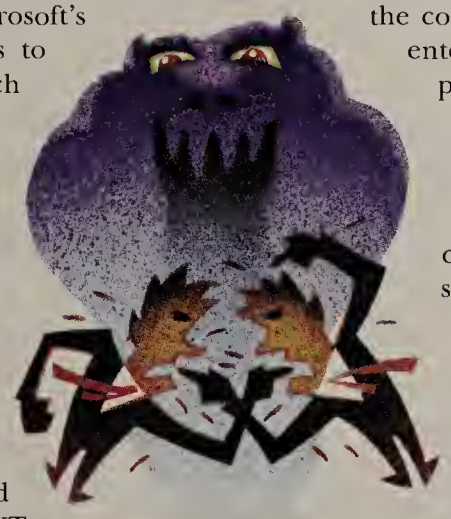
In wireline and wireless telephony worlds, this is called "mediation" instead of accounting, and an entire industry has been devoted to software that converts raw switch data into call detail records. So far, there is no equivalent accounting or mediation software for IP telephony. But Jeff Pulver and the Voice on the Net Coalition are

Lotus strategy may be kiss of death for Novell

Lotus may be doing itself a disservice by discontinuing development of Domino/Notes for NetWare.

Actually, disservice may be a polite understatement. What Lotus is doing — distancing itself from the only enterprise network operating system (NOS) and directory service that stand a chance against the Microsoft juggernaut — seems tantamount to slow asphyxiation for Lotus and Novell.

One of the few strategic advantages Domino/Notes has over other enterprise groupware products is its ability to run across many server operating environments, including several versions of NetWare, NT Server and Unix, as well as several mainframe operating systems. At the same time, one of Domino/Notes' most glaring vulnerabilities is its lack of an internal, general-purpose, enterprisewide directory service, such as Novell Directory Service (NDS) or Microsoft's upcoming Active Directory Service (ADS). Lotus has no plans to embed any such directory in its upcoming Domino/Notes 5.0, which means it is critically dependent on integration with the likes of NetWare and NT Server for such features.



It's hard to understand what message Lotus is sending to the market with its attempt to weaken NetWare and, by association, NDS. Is Lotus saying that NetWare is a dead environment and that Novell's enterprise customers should migrate to NT Server 5.0 and ADS as soon as they are released and field-proven?

Lotus' loss of faith in the future of NetWare comes at a delicate time for Novell. The NOS pioneer is on the verge of releasing NetWare 5, an upgrade that has largely received rave reviews and represents CEO Eric Schmidt's only real hope of turning the company around. Groupware sales increasingly drive NOS sales, and Microsoft's smashing success with Exchange/ Outlook make NT Server 5.0 — now due sometime in 1999 — an odds-on favorite to steal the NOS market Novell created and has long dominated. Meanwhile, Novell's also-ran groupware environment, GroupWise, offers no coattails of any consequence for NetWare 5, and loss of future support from the groupware market leader, Domino/Notes, can only be characterized as crippling.

Lotus now falls squarely into the camp of Microsoft vassals, waiting for ADS to fill its directory gap and hoping the Redmond folks get the bugs out of it and NT Server 5.0 before the Year 2000 crunch puts a chill on the entire market. Increasing dependence on Microsoft for directories and other enterprise infrastructure puts Lotus at a strategic disadvantage in the groupware market from which it may never recover. Whether or not you believe recent numbers showing Exchange/Outlook pulling ahead of Domino/Notes in number of licenses sold, you can't deny that Microsoft has the momentum in the collaboration market and will probably pull very close to Lotus' installed base within the next year.

The features that Lotus believes will allow Domino/Notes to maintain its pre-eminence in the groupware market fall into the mushy category of knowledge management. Lotus uses this term to refer to applications that support new ways of organizing, searching, navigating and sharing Domino/Notes' core object store of documents, databases, discussion groups and messages.

However, Domino/Notes' dominance in knowledge management and in the supporting replication techniques hasn't stopped Exchange/Outlook from making inroads into Domino/Notes' market. Microsoft has done so by focusing on the core groupware applications that most Domino/Notes users use — enterprise e-mail and discussion groups — and by providing a simpler product that is easier to install and administer and integrates more tightly with the underlying operating environment.

Lotus basically has no choice but to integrate Domino/Notes primarily with NT Server and ADS, cementing Microsoft's hegemony in the network computing universe. To counter the Microsoft challenge, Lotus should repackage Domino/Notes as two product sets: a basic messaging/newsgroup environment that fills the gap created when Lotus discontinued further development of cc:Mail and a Web-based application server offering knowledge management and replication functionality.

Lotus should de-emphasize Domino/Notes as a monolithic all-things-to-all-users groupware environment. This architecture, which Lotus pioneered and rode to considerable success, is looking increasingly unwieldy and hinders the company's ability to defend itself against Microsoft point products in this market.

As for Novell, it will have a tough time living down Lotus' rejection and positioning NetWare 5 in a market anticipating NT Server 5.0 and dreading 2000. It would be terrible to see Lotus and Novell lock themselves into a death spiral that only contributes to the greater glory and enrichment of Bill Gates and company. NOS and collaboration technologies are critical to the new world economy, and monopolization of either niche would not be in our collective best interest.

Kobielus is an Alexandria, Va.-based analyst with The Burton Group, an IT advisory service that provides in-depth technology analysis for network planners. He can be reached at (703) 924-6224 or jkobielus@tbg.com. The opinions expressed are his own.

MARTY BRAUN

leading an industry effort to standardize IP telephony accounting practices.

In contrast, Internet billing technology is mature. Billing involves associating accounting information with a subscriber, applying a rate for the service delivered (based on factors such as session duration, packets sent, numbers dialed and time of day) and presenting the charge on an invoice. Once IP telephony accounting technology matures, it can easily be added to a growing portfolio of enhanced services based on the underlying IP network without making any changes to the billing system.

Paul Varley
Internet product manager
Kenan Systems
Cambridge, Mass.

IP convergence a sham

I totally disagree with most of the opinions on IP convergence that Howard Anderson expresses in the article "From the IP convergence FAQ file" (Aug. 10, page 36).

First, the 50% data traffic that is identified is nonsense. What metric is it based on? If it is bits, which is probably the only reasonable measure, data is in the 1% area. Yet the 50% data figure keeps getting widely quoted by the technical press.

The article suggests that the most reliable portion of the communications segment (voice and fax), which accounts for 99% of the traffic, be merged with the least reliable communications segment (data), which accounts for 1% of the traffic.

For voice and fax, why on earth would any sane person want to take a mechanism that is highly reliable and convert it to a mechanism that is marginal at best?

Except for a very few applications, such as Web-integrated call centers, there is no technical advantage to having voice and data on the same network.

The cost advantages that are so frequently hyped are primarily caused by regulatory abnormalities.

The argument that the equipment cost is so much lower doesn't make much sense since the cost of running a network is mostly associated with people, and I doubt that you could make a reasonable argument that an IP data network requires fewer or cheaper people.

The IP network was designed for data traffic, and trying to force-fit voice traffic onto it will never really work.

Walt Tetschner
President
Tern Systems
Acton, Mass.

Anderson responds: The metric is based on bits — and facsimile, e-mail and file transfer. In the 1980s, most corporate networks were 80% voice and 20% data. But over the past 10 years, the voice side has been growing only 3% per year, per employee, while the data side has been growing at 35% (and I am including e-mail, fax and file transfer in this as well as intranet traffic). Most of my clients have found that their data networks passed their voice network in terms of total traffic in the past year.

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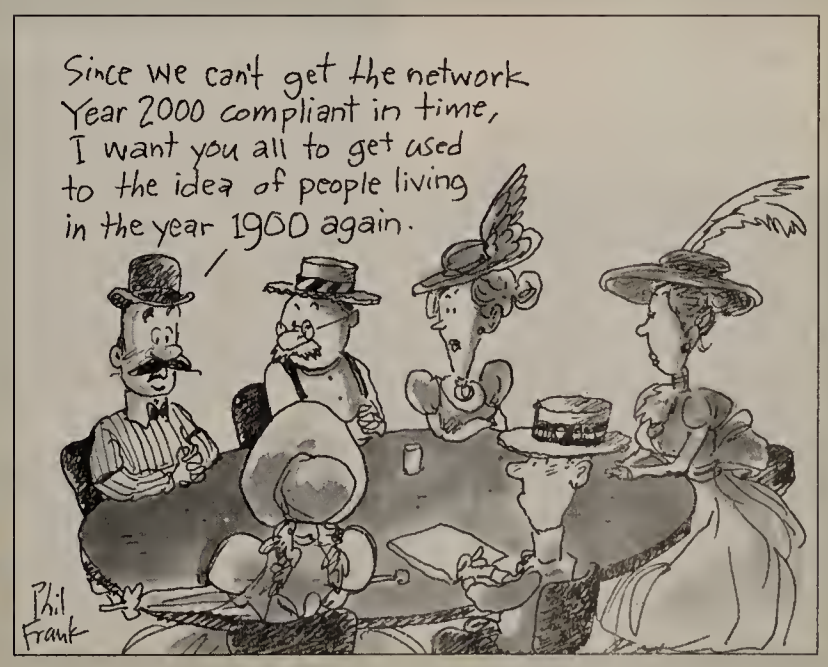

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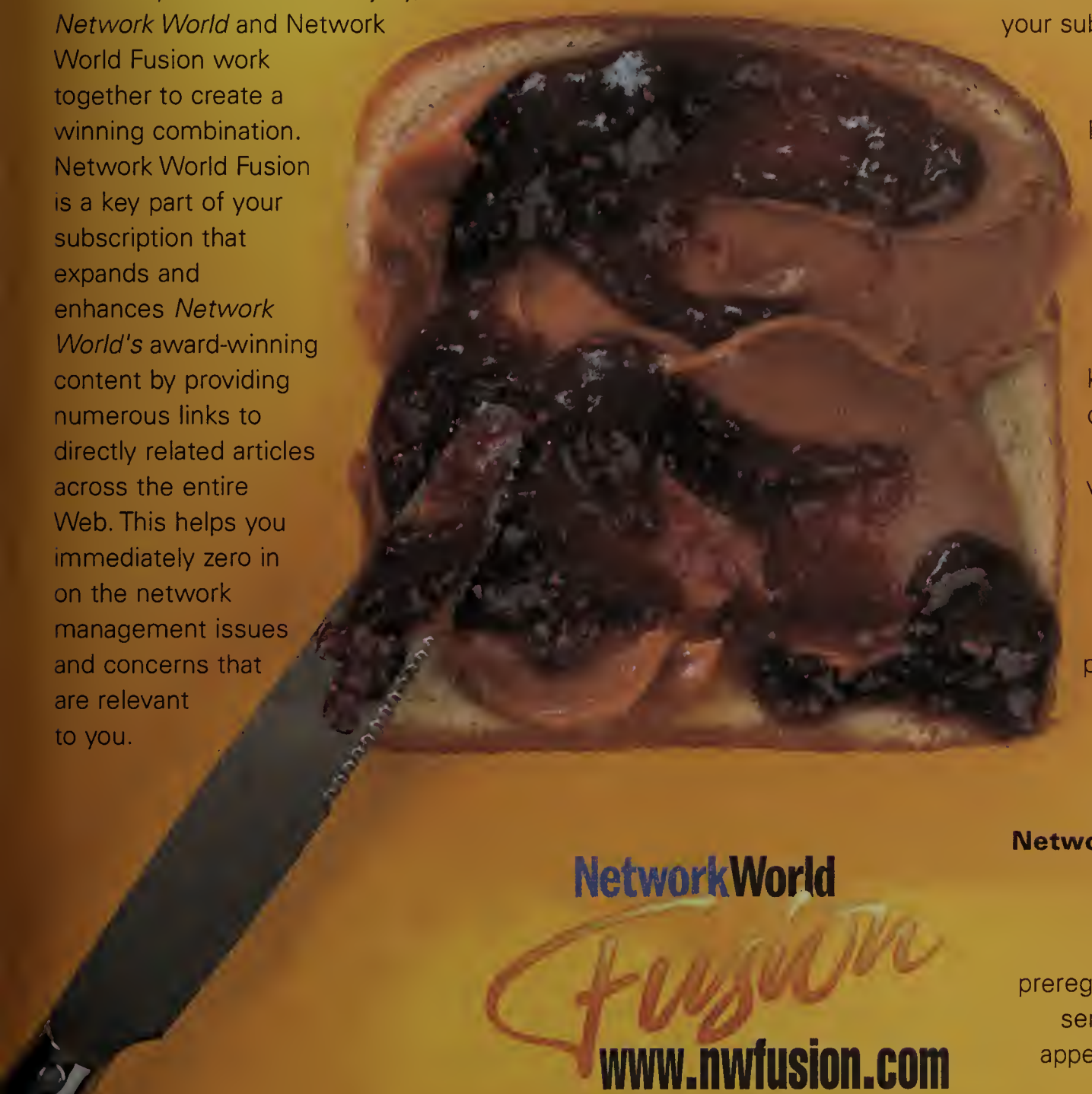

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SPECIAL REPORT:
Age discrimination in IT

Career crisis

Continued from page 1

According to the industry group Information Technology Association of America, an estimated 346,000 IT positions are unfilled these days, a situation the ITAA calls "a national labor shortage of historic proportions." But Curry and others in his age group charge that employers can find plenty of people if they abandon the biased perceptions that older workers are too expensive, lack the latest skills and present a cultural mismatch in the youth-oriented IT field.

Age does matter when it comes to IT hiring, according to a survey of 200 *Network World* readers with some degree of hiring responsibility. The survey clearly shows that younger network managers tend not to hire older workers.

Only 13% of the 30 survey respondents in the 20-30 age group hired anyone over 40 in the past year, but that percentage increased as the age of the hiring manager increased. Of the 80 network managers in the 31-40 age group, 24% had hired an over-40 person in the past year. The percentage rose to 39% for the 57 managers in the 41-50 age group and up to 45% for the 31 respondents over 50. (Two respondents refused to give their ages.)

When the network managers were asked if they had never hired someone over 40, the results again followed chronological lines. Among the 20- to 30-year-old respondents, 47% said they had never hired a person over 40. That figure was 39% for managers 31-40; 23% for managers 41-50 and 16% for those over 50.

The survey results don't surprise Kathy Nichol, who has 18 years' experience as a high-tech recruiter in the Dallas area. Nichol says she works with one thirtysomething hiring manager who gravitates toward "young fast-track managers." When Nichol has recommended older workers, her client rejected them, saying the candidate lacked energy, couldn't cut it in a fast-paced environment, or should have been further along careerwise. "He doesn't even recognize what he's doing," Nichol says.

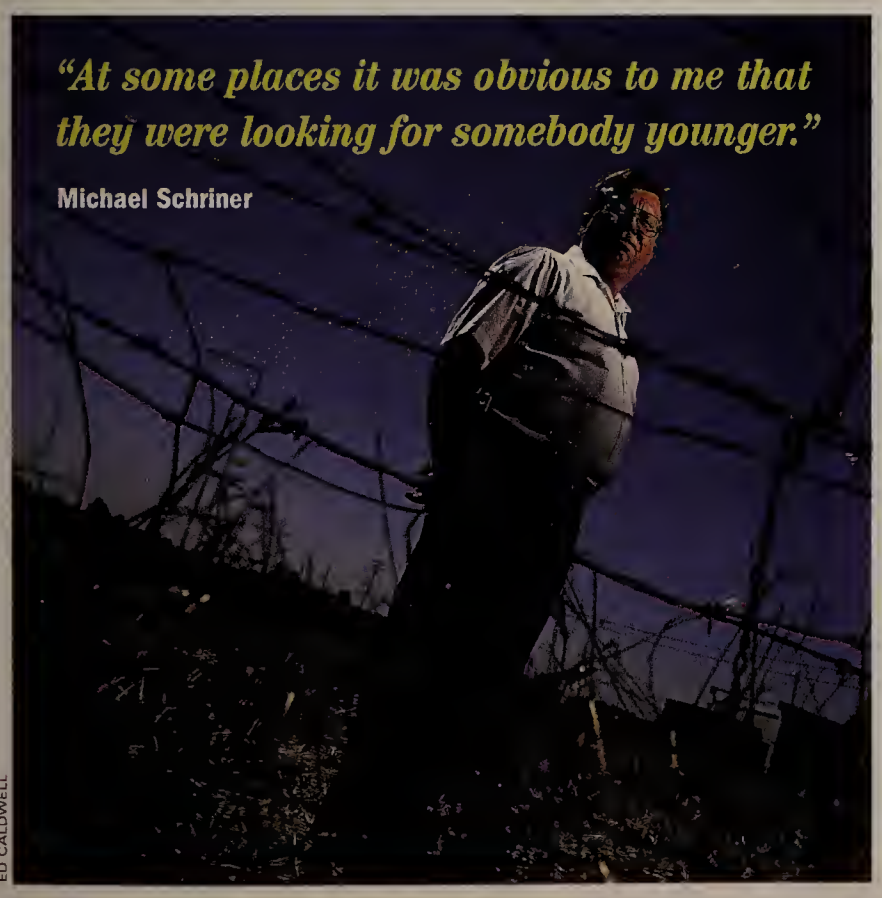
"I'm hearing from a lot of people in their late 30s and early 40s who are feeling the crunch."

Paul Kostek, president of the U.S. chapter of the IEEE

Work culture promotes ageism

Going beyond the numbers, there's plenty of anecdotal evidence to support the claim that the ideal IT job candidate is a single, male, new college graduate who knows Java and is willing to work 80 hours per week for entry-level pay. Curry points out that a 23-year-old who sat next to him at his contract job recently landed a full-time position, even though that person had only a fraction of Curry's know-how.

Jack Bobo, research director for the National Software Alliance (NSA), a Washington, D.C.-based consortium of industry, government and academic leaders concerned about the IT labor shortage, says companies are "trying desperately to hire entry-level people." The reason: Young workers are viewed as willing to put in longer hours for less money and are perceived to have the hot skills.



ED CALDWELL

Conversely, older workers are seen as dinosaurs. Michael Schriner, 50, of Vacaville, Calif., is certified on NetWare 3.1 and 4.1 and has been working with a beta version of 5.0, which is scheduled for release this week. Schriner has seven years' experience maintaining a NetWare LAN at a large corporate site, but he has been out of permanent work since his company folded a year ago.

However, he hasn't been without interviews, most of which he describes as surreal nightmares. One time, he was left sitting in the lobby while several employees peeked into the lobby and "gave me the eyeball." Finally, someone came out and gave Schriner a quick tour of the building, then showed him the door without ever conducting an interview. During the quickie tour, Schriner was asked if he were willing to work 36 hours straight to solve a problem, the implication being that someone his age wouldn't be.

"At some places it was obvious to me that they were looking for somebody younger," he says.

Schriner just landed a temporary position for the next few months, but when that assignment ends, he'll be back on the job hunt.

In high tech, the definition of an older worker is far different than that in most other professional fields. "I'm hearing from a lot of people in their late 30s and early 40s who are feeling the crunch," says Paul Kostek, president of the U.S. chapter of the Institute of Electrical and Electronics Engineers (IEEE). "Many have jobs, but if they're trying to find new positions, many are being frozen out. They're not even getting an opportunity to get an interview."

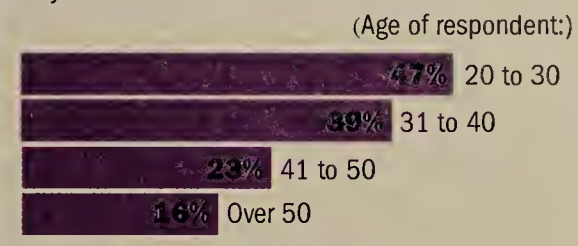
"The high-tech business is considered a young person's game," adds David Greenberg, a Beverly Hills attorney who specializes in age discrimination cases. A consumer shopping for a surgeon would probably feel more comfortable with someone 45 years old than with a young resident fresh out of medical school, Greenberg says. "But in high tech there's a reverse correlation; experience means you're not up to date."

Kostek says a potent mix of cultural and eco-

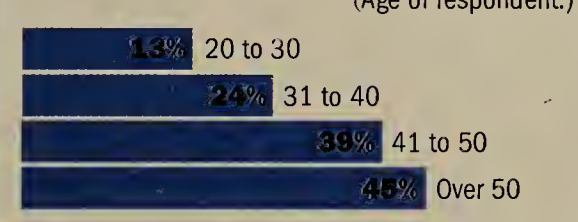
OLDER WORKERS ARE LARGELY OVERLOOKED

IT hiring trends illustrate age discrimination, according to the results of a *Network World* telephone survey of 200 readers with hiring responsibility conducted by First Market Research of Austin, Texas. The numbers also indicate that older managers are more likely to hire their peers.

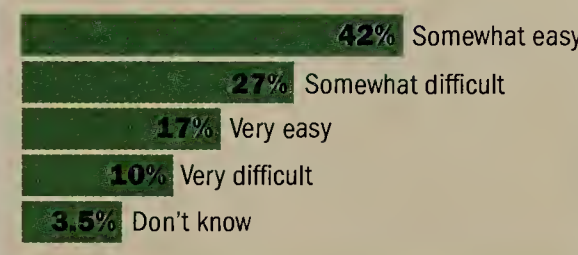
Percentage of respondents who have never hired anyone over 40:



Percentage of respondents who have hired anyone over 40 in the past year:



Perceived ease with which network professionals over 40 can find a job today:



nomic factors are working against older workers. Software companies and Internet start-ups, in particular, tend to be founded and run by young people who are simply more comfortable working with their peers. On top of that, companies figure someone with 20 years' experience will demand top dollar, so they hire the younger worker without ever determining the mid-career worker's salary requirements, Kostek says.

Job seeker Curry analyzes his situation this way: "When companies see my résumé, they either don't believe it and shred it or they believe it and automatically dismiss me as too expensive."

Quantifying the problem

Finding hard evidence to support claims of age discrimination in the computer industry is difficult. For example, the Equal Employment Opportunity Commission (EEOC) received 15,785 age discrimination complaints in 1997, roughly the same amount as in 1996. But the federal agency doesn't break down the numbers by industry or occupation, and it rejected 61% of those complaints for lack of reasonable cause.

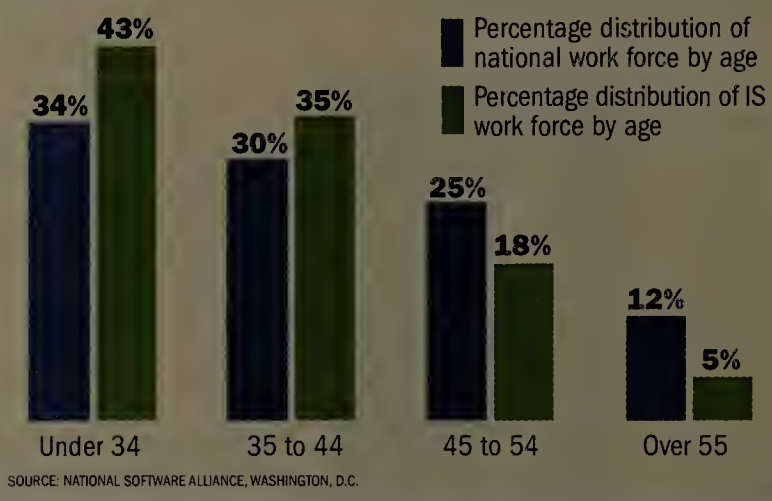
And the legal definition of age discrimination is a moving target. The California Court of Appeals recently ruled that a company can fire an older, higher-paid worker and hire a younger, less-expensive worker as long as the decision is based on cost-cutting and not on a particular bias against people over 40. Advocates for older workers say the ruling makes it much more difficult for plaintiffs to win age-bias suits.

"Companies are so desperate for employees that they'll hire anybody regardless of age."

Harris Miller, president of the Information Technology Association of America (ITAA)

AGE IMBALANCE

Statistics show that older workers are under-represented in IT. People 45 and older accounted for 37% of the college-educated U.S. work force in 1997 but represented only 23% of the total work force in the IS field.



SOURCE: NATIONAL SOFTWARE ALLIANCE, WASHINGTON, D.C.

However, there are statistics that seem to indicate age bias. A 1997 breakdown by age of college graduates in the U.S. work force shows that 37% of these workers were 45 and older. But among computer scientists and programmers, only 23% were 45 and older. The numbers are even more striking in the over-55 age group, which constituted 12% of the total college-educated U.S. work force but only 5% of the IT field, according to a report by the NSA.

Daniel Gerard has had the grand tour of numerous Silicon Valley companies over the past couple of years as part of his unsuccessful effort to find a programming job. "No one has been older than me," says the 40-year-old. "Where are the 50- and 60-year-old engineers? I'm not seeing them, and that's scary."

Bobo, who compiled the work force numbers, says one explanation is that the computer industry is a young field to begin with, so one wouldn't expect to find as many older workers. And by the time programmers hit mid-career, they typically move into management positions.

Another explanation, of course, is that older workers are being eased or pushed out the door.

On the defensive

Harris Miller, president of the ITAA, says the fact that a handful of vocal mid-career people say they can't find jobs doesn't prove age discrimination. It may mean those particular people lack up-to-date skills, have inflexible salary demands, or aren't willing to relocate to areas where the jobs are.

The bottom line, Miller says, is that "companies are so desperate for employees that they'll hire anybody regardless of age."

Tracy Koon, director of corporate communications at Intel, flatly denies that age bias plays any role at the fast-growing chip maker. She says it makes no sense for the company to try to ease out older workers: "We invest huge amounts of money in training our employees; why would we want to lose them?"

And Kenneth Mockler, director of worldwide staffing at EMC in Hopkinton, Mass., says the company hired 1,400 people last year, including many mid-career workers from the nearby Digital division of Compaq. "It's so hard to find senior qualified talent," he says.

Koon says the average age of the Intel employee has remained flat over the past three years, moving from 36 in 1996 to 36.4 in 1997 to 36.3 in the first quarter of 1998. She argues that with all the hiring Intel has done, if it were systematically dumping older workers and replacing them with 23-year-olds, the average age would be dropping.

"We've tried to look at [age discrimination]

Age is just a number

While job opportunities are in short supply for older IT workers, some companies do make a concerted effort to include them in the hiring mix. These firms value the project management skills, vertical industry knowledge and general business savvy that comes with experience.

Financial services firm First Security has hired several staffers over the age of 40 in the past year to fill network support and engineering jobs in its 650-person IT organization. The company recently hired a network engineer in his mid 50s after his job at a major oil firm was outsourced.

Experienced employees cost more than younger hires, but they're worth it, says Casey King, systems specialist at the fast-growing business in Salt Lake City. "They hit the ground running, know what they're doing and require less training," he says of the seasoned workers.

There's not much time for training at Steven Myers & Associates (SM&A) in Newport Beach, Calif., so the company relies heavily on older professionals. SM&A manages complex contract proposals for major defense contractors and aerospace firms, hiring engineers with extensive experience in those industries. The average age of the company's core group of about 150 engineers is 52.

"These people are the cream of the crop," says Ronald Hunn, senior vice president and chief financial officer. They provide a stable work force, bring a high level of professionalism and are strongly motivated, he says.

EMCO's Richard Ormsby has a mature work force of engineers.

GERRY MCINTYRE

Power supply manufacturer EMCO High Voltage in Sutter Creek, Calif., also relies on several engineers who are over 40. Richard Ormsby, director of operations at EMCO, says older workers are far more productive than industry newcomers, which more than offsets any salary differential. "You don't have to reinvent the wheel with them," Ormsby says.

The Los Angeles Times also is willing to pay a premium for mid-career people to join its growing IT department, says Jeffery Wallace, the company's director of staffing and diversity. Such workers possess the right technical skills and "have been in the battlefield and know where the land mines are," Wallace says.

Because the publication shoots for a mix of bright but unproven workers as well as solid seasoned professionals, Wallace makes sure to contract with recruiters who represent a mix of age groups.

— Neal Weinberg

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very seriously. We just have not found it," Koon says.

A similar analysis of the average age of all computer professionals, conducted by the NSA, shows an increase from 35.5 in 1989 to 37.8 in 1997. The NSA's Bobo says the numbers prove companies are hiring older workers as well as younger workers.

The challenge to find work

Demographics and statistics are small consolation to Kathy Nolan, 50, of Riverdale, N.J., who has a degree in business with a minor in computer science and 25 years' experience as a software programmer. She has kept her skills current, moving from the mainframe world of COBOL and DB2 to the client/server arena with Power-Builder to Web technologies.

Her systems analyst position was eliminated one year ago, and she has been without work since, except for a temporary contract job that ends when a woman who's on maternity leave returns to work. Nolan says the job search is a frustrating process in which age bias plays a major role. "Over the phone they're enthusiastic, but when they see you and realize you're older, they say, 'Oh, boy.'"

"The high-tech business is considered a young person's game."

David Greenberg, a Beverly Hills attorney who specializes in age discrimination cases

But to Steve Patchell, senior consultant at the management consulting firm Watson Wyatt Worldwide, headquartered in Bethesda, Md., the issue is not age; it's whether an employee has up-to-date skills in an industry notorious for the rapidity with which entire skill sets become obsolete.

Companies are desperate to find "plug-and-play" workers, and Patchell says companies don't care whether potential employees are 28 or 52, as long as they can hit the ground running. On the other hand, "if you don't get the skills, you're essentially road kill," he says.

Job seeker Gerard went out and got the right skills, and he's still road kill. A former musician, he earned an associate's degree in computer science from De Anza College in Cupertino, Calif. While in school, he did an internship with NASA.

"I did the right thing, I went back to school, I followed through correctly, I worked for NASA, and then poof, it went downhill from there. I had a couple of temp jobs that combined didn't last more than nine months in 1995 and 1996 and that was it. I haven't worked since the end of 1996."

He has sent out more than 300 résumés and continues the job hunt, but frustration is setting in. "It's a tear-jerker. I'm earning zero. I'm an adult, educated person," Gerard says. "It's unthinkable to me that anyone could be in this situation."

Gerard is convinced that his age is working against him. Although companies try to mask it, sometimes the reaction of a hiring manager gives the game away. "When I walk in sometimes, I get a red-faced reaction," he says.

He argues that employers shouldn't be swayed by his chronological age. "I'm no longer a 40-year-old; inside I'm 25. I've truly changed as a person and re-educated myself." However, he says employers have fixed expectations and believe young engineers are the best hope for their companies.

Unfortunately, the odds are stacked against Gerard, recruiter Nichol says. Companies don't want to hire older workers for entry-level jobs because they don't want a 40-year-old reporting to a 24-year-old. "It's a cultural thing," she says. Naturally, the company won't come right out and say age bias is coming into play, but managers will come up with some other reason not to hire that person, she says.

Companies are demanding people who match up perfectly with the job description and have direct experience in the particular skill required, Nichol adds.

But job-hunting mid-career professionals argue that those requirements are sometimes impossible for anyone to meet. For example, this job description appears on the Web site of Advanced Computer Resources, a Florida-based recruitment company:

Candidates must have a broad exposure to a variety of technologies and concepts in a client/server environment including: Enterprisewide solutions, Application Architectures and Software, Distributed Client/Server Architectures, Large Systems Delivery, Internet/Intranet Development, Electronic Commerce (Java, Hot Java), Windows NT, C, C++, Unix, SQL, Oracle, Sybase, Informix, Visual Basic, PowerBuilder and leading projects using formal methodologies.

And the job requires travel between 90% and 100% of the time.

"They're looking for somebody who shows up wearing blue, long underwear and a red blanket tied around his neck . . . Superman," complains job seeker Schriner. But after a year without a job, his situation is no laughing matter. "If something doesn't pop pretty quick, I'm going to have to find another way to pay the bills," he says.

Weinberg is Network World*'s features reporter. He can be reached at neal_weinberg@nww.com.*

Five tips for mature job seekers

If you're a mid-career professional searching for an IT job, try the following tips for selling yourself.

- **Get the latest skills.** Most recruiters agree that it's much more difficult to find a job if you don't have the latest skills. Scrape up the cash and invest in a training course in a hot area such as Java or Windows NT.
- **Emphasize flexibility.** Hiring managers may assume older workers have a fixed salary in mind, might be unwilling to work nights or weekends if necessary, or may not consider relocating. It's up to you to dispel those assumptions as quickly and forcefully as possible.
- **Find referrals.** Since employee referrals seem to be the most popular and most effective tool that companies use to find people, burn up the telephone lines tracking down former co-workers and bosses who can put in a good word.
- **Package your experience.** Attempt to move beyond the rigid skills-matching that goes on in the hiring game by packaging your experience in terms of business processes or IT processes.
- **Do some homework and find the right company.** "You have to find a match between your own imagination and the imagination of the companies that are looking for people," says Diane Tunick-Morello of Gartner Group.

— Neal Weinberg

Get more online:

There is plenty more information online about age discrimination in IT, and opportunities for older workers. Here's a sampling of resources linked to Fusion:

- The Equal Employment Opportunity Commission Web site, which includes the text of The Age Discrimination in Employment Act of 1967 and statistics on age discrimination complaints.
- Legal information from The National Senior Citizens Law Center and attorneys who specialize in discrimination cases.
- "Debunking the Myth of a Software Labor Shortage," a paper by Norman Matloff, a professor at University of California at Davis. Matloff's site features links to House Judiciary testimony on the IT labor shortage and to several other pertinent resources.
- The Commerce Department report on the labor shortage. Reports from groups that deny that age discrimination is a big problem in the IT industry.
- The U.S. Labor Department Web site, America's Job Bank, offers a free listing of 770,000 jobs, plus resume and career information.
- Green Thumb is a national non-profit organization that provides employment and training services for mature workers. Go to the agency's Web site for information on IT training programs for seniors, dislocated workers and disadvantaged individuals.
- Microsoft's Skills 2000 initiative page is aimed at recruiting and training people for jobs in the IT industry. The site offers an abundance of resources on IT careers, internships and training opportunities.

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REVIEW

ELEMENTAL SOFTWARE'S DRUMBEAT 2.0 PUTS A SIMPLE FACE ON A DIFFICULT TASK.

Database-driven Web development

By Thomas Powell

Long ago (in Internet time), corporate Web sites were built by solitary Webmasters using only simple elements.

Today, state-of-the-art sites include dynamic Web pages whose contents differ depending on user choices and calls to high-end relational databases on the back end. Building such sites is a challenge; not only do you need to know HTML, but you also need a fair amount of technical knowledge about database access as well.

Elemental Software's Drumbeat 2.0 begins to address the gap between WYSIWYG Web design tools and more finely programmed Web sites. The product falls somewhere between Microsoft's FrontPage and Visual InterDev in complexity and capability. Though not perfect, Drumbeat gives you near point-and-click development of basic database-driven pages.

One of Drumbeat's biggest strengths is its focus on a template-based approach to site building, in which content resides in a content table or database, separate from the page structure. It's easy to create a common subpage template and apply it to dozens of pages. Even nicer is the ability to create whole groups of pages using the concept of PageSets. After defining a common template, you can create a group of pages from a static content table or database query and thus give them a common look.

To aid in building pages dynamically, Drumbeat comes with a DataForm Wizard that allows you to graphically and manually create SQL statements for querying a database. The wizard provides basic page forms such as result, detail, update, insert, delete and search pages.

Drumbeat also provides a variety of predefined Dynamic HTML features and other page enhancements. Most page items are SmartElements that can be activated with a simple menu selection; for example, getting a logo to fly in takes just a few clicks. The various dynamic features are mostly JavaScript, but Drumbeat also supports Java applets, ActiveX controls, Scriptlets and plug-ins.

With the range of Web browsers in use today, the novice developer can get into trouble inserting content that doesn't work in all browsers. Drumbeat handles this problem by using SmartPages, which allow you to build a site whose pages vary depending on the browser used. At start-up time, Drumbeat asks you to indicate the browsers you want your site to support. The product supports sites built around any browser, termed "generic," Netscape 3.0-level browsers, Internet Explorer 4.0 or any 4.0-level browser. The point of the feature is to allow Webmasters to design for older browsers that have minimal or no JavaScript support, browsers with basic JavaScript support and those with advanced JavaScript and style-sheet features. A single page can have multiple versions that are managed logically as one, and the browser-specific pages don't have to be coded manually.

The process of building pages in Drumbeat is similar to that of many other Web development products. The editor positions page elements two ways: using tables for older browsers and with absolute positioning using Cascading Style Sheets (CSS) for newer, 4.0-level browsers. Drumbeat is one of the first development tools to focus heavily on the use of style-sheet technology in static pages. However, you need to preview your pages carefully; as with most WYSIWYG editors, it's possible to create pages that look one way in the editor and slightly different in a browser, especially given the differences in CSS support between Netscape and Microsoft.

In general, Drumbeat excels at basic page layout and at positioning image, form and text elements. Compared with some editors, however, the tool is a bit too restrictive. For example, Drumbeat was not able to directly create a table with a row spanning two columns. The only way to insert such an item was by using a pass-through HTML feature that allows handcrafted HTML code to be added to the page.

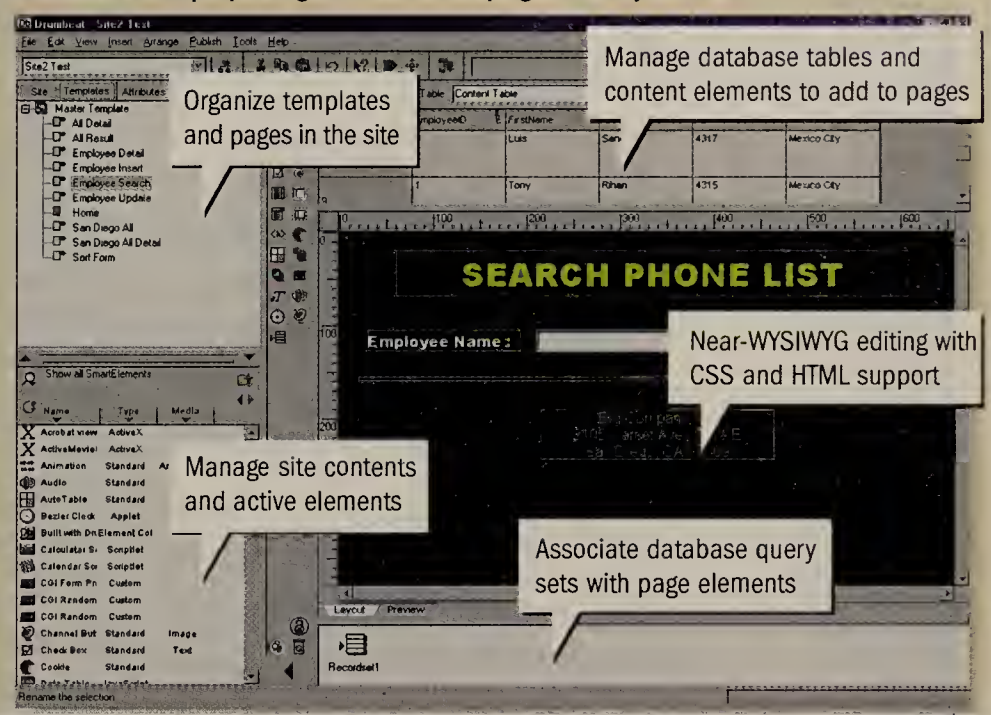
With Drumbeat, you can begin building a site three ways: by creating a blank site, building a site based on a prebuilt template called a starting point or importing an existing Web site. If you're using SmartPages to route Web surfers to the appropriate version of a page, you must specify when you start the product how you're going to detect which browser they're using. You can use client-side detection via JavaScript or server-side detection via Active Server Pages (ASP). Drumbeat is geared toward ASP for server-side SmartPages, though it supports the Common Gateway Interface.

Because many sites are being upgraded rather than built from scratch, a key test of Web site development tools is how well they import existing sites. We found Drumbeat imported pages fairly well. In our testing, most page layouts were adequately preserved.

However, Drumbeat cannot effectively import framed sites. While it can import the framed

DRUMBEAT 2.0

Drumbeat's multiple panes give access to the program's many functions.



Score Card

	Page layout tools (25%)	Database integration (25%)	Import capabilities (10%)	Browser support (10%)	Templates and wizards (10%)	Installation (10%)	Documentation (10%)	Total score
Drumbeat 2.0	8 x .25 = 2.00	9 x .25 = 2.25	7 x .10 = 0.70	9 x .10 = 0.90	5 x .10 = 0.50	9 x .10 = 0.90	9 x .10 = 0.90	8.15

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score.**

pages, you must recreate the frame structure. Furthermore, Drumbeat's current frame tool is limited to 10 common styles. While you can add new frame styles to the wizard by copying and changing some configuration files, this is less than convenient.

Another serious import problem is Drumbeat's inability to retain JavaScript code with pages. If the imported site has rollovers or form validation, be prepared to reassociate the scripts or even reimplement them. Fortunately, Drumbeat makes the creation of basic scripts easy.

The product's site import tool is too restrictive in the structure of sites it can import, currently limiting sites to a depth of three levels. Testing on an existing site with several hundred pages showed this limit to be unreasonable. Support documents on the World Wide Web indicate that increasing the impor depth requires a change to the Windows registry.

Despite its limitations, the import too has two ingenious features. First, it allow you to import site structure only and to build logical structure without content, so you can see how pages are logically interrelated without being distracted by the content. Second, Drumbeat allows you to insert remote pages that are not being updated but are part of the logic site. This trick, in conjunction with the ability to import just the structure, allow you to change a few pages in a much larger site tree while preserving the logical relationship between pages.

Beyond these features, Drumbeat is not well-suited for extremely large We projects. The product lacks any sense

Drumbeat 2.0
Elemental Software, Inc.
(760) 931-7171
www.drumbeat.com
$699

PROS
- ▲ Wizards help gen Active Server Page co for database-driven We pages
- ▲ Strong template and page generation feature
- ▲ SmartPages for bro specific features

CONS
- ▼ Site importing is som problematic
- ▼ Interface has rough

team-oriented features, integration w source code repositories or other cor tent management systems beyond its own built-in asset manager.

Installation of Drumbeat is not diffi cult, but you may have more trouble configuring the necessary workstation and server database applications if they're not already set up.

Drumbeat accomplishes many incr ible feats, such as browser-specific pa handling, point-and-click page embe ishments and automatic page genera tion with templates and database queries. It's a welcome advance over one-page-at-a-time tools for building Web sites with content tightly bound with visual design.

But like many Web development tools, Drumbeat still has a lot of rou h edges. The tool is still best-suited fo someone with specialized expertise Web development and databases. In capable hands, Drumbeat can be a highly effective tool for visually man g- ing and developing small to mid-siz data-driven Web sites.

Powell is president of PINT (www.pin com), a San Diego Web development firm and the author of Web Site Engineeri and HTML: The Complete Referen *He can be reached at tpowell@pint.com.*

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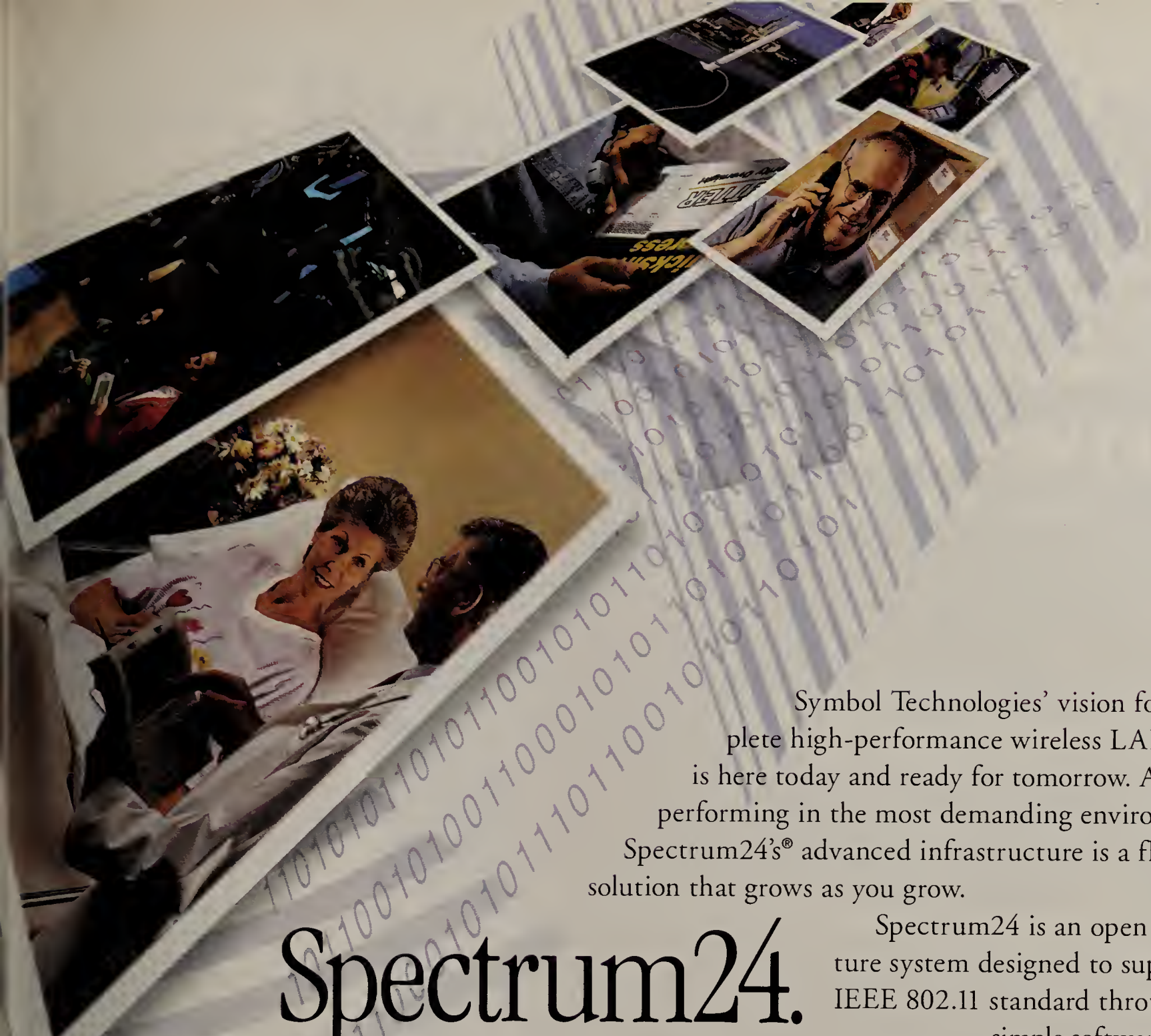

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COOL TOOLS

The little black book of the '90s

If you have a Rolodex taking up prime desktop real estate, get rid of it. Replace it with Franklin Electronic Publishers' Rex-3-DS PC Companion, a contact manager on a PC Card. It's the size of a credit card and weighs less than the change in your pocket.

Rex's front panel features a tiny LCD screen that shows your contacts, appointments, a to-do list and even downloaded memos. The device beeps when you have a meeting. The unit has 256K bytes of memory — enough, the vendor says, for 3,000 contacts.

Rex has five buttons that allow you to maneuver around its data. Two buttons are arrow keys to move the cursor forward and back; one selects the field over which the cursor rests; one escapes back to the previous level; and the last key brings up a screen telling the viewer where to return the unit if it's lost. Navigating is a bit like using a telephone keypad to search for names in a voice mail system — it's not elegant, but it works. Rex's main drawback is the lack of a search function; to get to a given name you have to click through several layers of on-screen menus.

Quick takes on high-tech t
by Test Center Director
Lee Schlesinger

The software that stores the contact information on the PC side is simple. You can use the product's built-in contact manager, or import data from Act, GoldMine or TeleMagic using the bundled CompanionLink application. Starfish Software's TrueSy Plus, an application that synchronizes with Microsoft Outlook, Lotus Organizer and others, is available for $70. If you synchronize, you can choose to include or exclude contacts, meeting calls and to-do items; you can include all contacts or a subset; and you can omit addresses to save memory.

To download information, you simp insert the Rex card into a PC Card slo If you're using a desktop computer without a PC Card slot, you use the bundled docking station to quickly transfer data via a serial port instead. You can also buy the Rex without the docking station for about $85.

Data transfer is one-way only; there no way to enter data on the card.

Rex is well-designed and handy. My only worry was that I would lose it fro a shirt pocket or crush it in a pants pocket. Slipping it into a handbag or briefcase is probably the best way to ensure its safety.

Net Results

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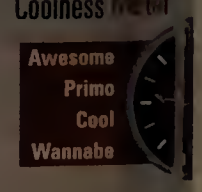

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Management Strategies

Managing by messaging

If your favorite way to communicate with employees is via e-mail, think about the effectiveness of your message.

By Mark Gibbs

Winn Schwartau runs two security firms, yet he wouldn't recognize most of his employees if he ran into them on the street. That's because practically all of his business activity is managed by e-mail.

"We have a couple of employees I have never met or spoken to. I don't know their age, color, religion or anything," says Schwartau, the CEO of Interpact and The Security Experts. "They work out great."

He only meets with his assistant about once per week and says they can go for days without speaking to each other. And Schwartau can count on one hand the number of times he's seen his Webmaster in person or spoken to him on the phone.

The way he sees it, face-to-face or telephone communication isn't always necessary to get the job done. "It's all about professionalism, the right people and a good healthy dose of techno-independence," says Schwartau, who is also a *Network World* columnist.

Schwartau is riding the leading edge of management practice. He's successfully running a virtual corporation driven by information technology and electronic communications. And he's relying on one of the most powerful management tools of the computer age: e-mail.

However, the idea of management by e-mail often has negative connotations. Some managers who communicate solely via e-mail may inadvertently be sending the message that they don't care if the message gets through to the recipient.

Overreliance on e-mail as a communications channel is increasingly common. Managers often feel they're in the middle of an organization, pressured by senior executives to produce and overwhelmed by the job of dealing with staff.

Under these circumstances, it's not surprising that many managers dive behind their computers and issue edicts that manage the process rather than people.

Of course, it's not only managers who manage by e-mail. Staff, in turn, find they can manage their managers by confining their interaction to e-mail as much as possible. For both groups, e-mail can represent a means of escape from face-to-face communication.

While e-mail may indeed smooth the load to some degree, it also carries a big potential for misunderstanding. The problem, however, is not e-mail but communication skills.

John Gennaro *of Global One says the blame for poor communications lies with the messenger and not with the medium.*

"Employees who cannot communicate, whether orally or in writing, are less effective. This has little to do with e-mail," says John Gennaro, director of managed data services at Global One in Reston, Va.

In general, managers do little to improve the communication skills of their staffers, says Gennaro. The more proactive organizations teach their employees how to answer the telephone to convey a polished corporate image. But few companies train workers to improve their business writing or suggest guidelines for e-mail correspondence.

Even so, there are certain situations where bad e-mail may be more effective than the best face-to-face or telephone contact. For example, when you're communicating with native speakers of another language, "it's sometimes easier to understand a grammatically incorrect e-mail than it is to work through an accent over the phone," says Gennaro.

Thanks to increased telecommuting, virtual organizations and the need for greater mobility in business, managing by e-mail is here to stay. The key to making it work is knowing who you're communicating with and messaging about the right things.

Mark Gibbs is a writer, contributing editor and columnist at Network World, and a consultant who spends far too much time reading e-mail. Send him some more at mgibbs@gibbs.com.

10 rules for managing by e-mail

1. Establishing goals and providing feedback is even more critical when you don't talk to employees on a regular basis.
2. Avoid ambiguity. The lack of personal contact in e-mail amplifies ambiguity. Read your e-mail before sending it. Is there anything that can possibly be misconstrued? If so, reword it.
3. Ensure that everyone knows what matters. Assemble and summarize message threads, and flag the top priorities for your team.
4. Keep your eye on the ball. Status reports sent via e-mail are no substitute for checking things out for yourself.
5. Know your employees. Spend time working closely with staff before relying on management by e-mail.
6. Establish a hierarchy of communication tools depending on urgency, such as regular mail to fax to e-mail to voice mail to real-time voice.
7. Agree on routine. Set expectations for how often workers should check their e-mail and voice mail so everyone is on the same page.
8. Know your lowest common denominator. File transfers with attached video clips, multimedia files, and other bells and whistles can create far more aggravation than they are worth, particularly to dial-up users. Drop back to the "stone age" of pure text messages whenever possible.
9. Publicly recognize employees for a job well done by sending a message to the whole team.
10. Don't discipline by e-mail. The medium is too impersonal and too easily misinterpreted to carry a rebuke or criticism.

— Mark Gibbs, with Chuck Papageorgiou, managing partner of ideasphere, and Gil Gordon, president of Gil Gordon Associates

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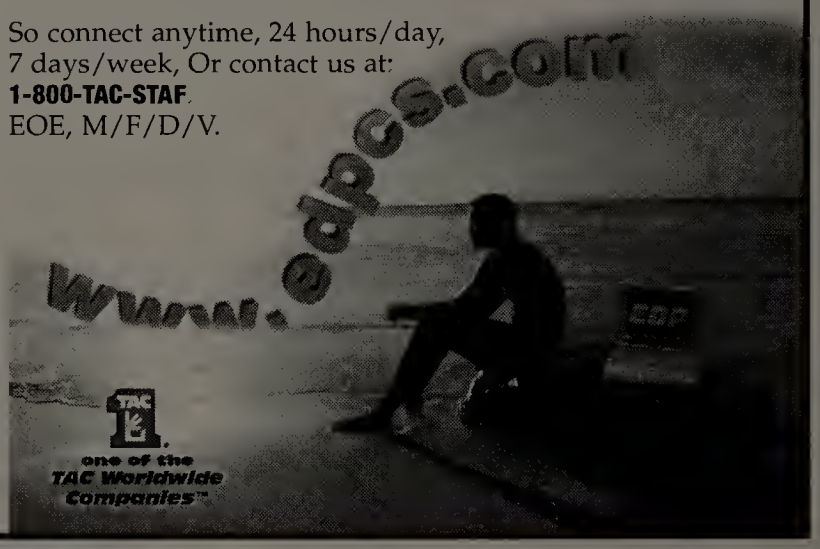

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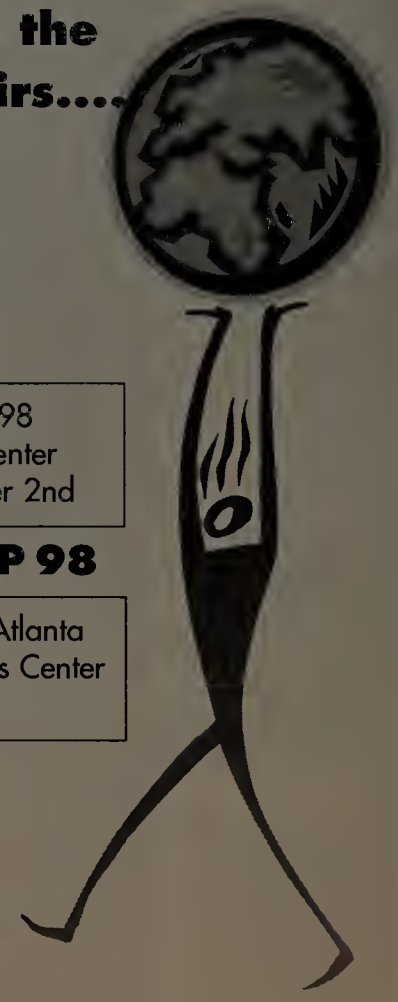

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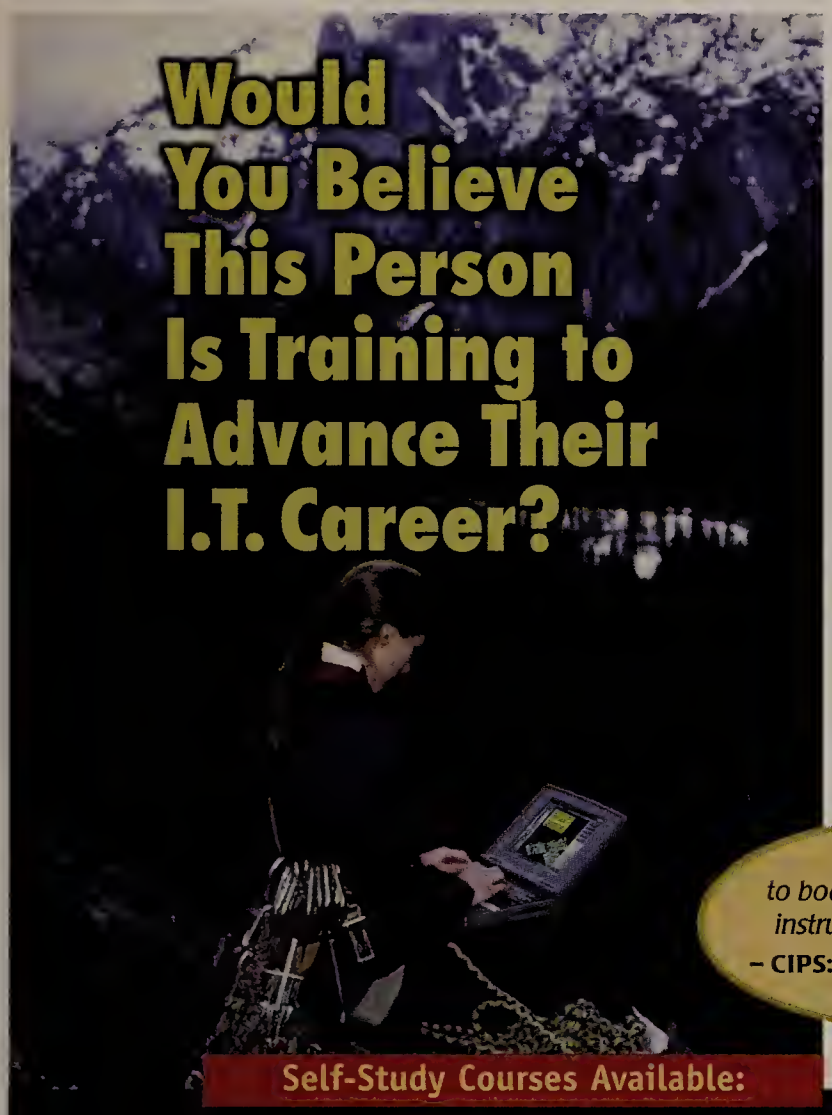

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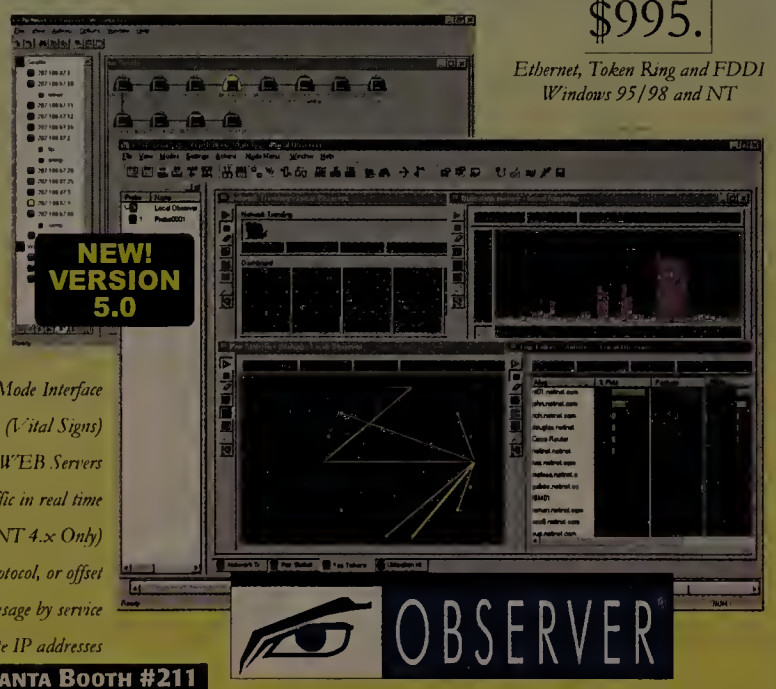

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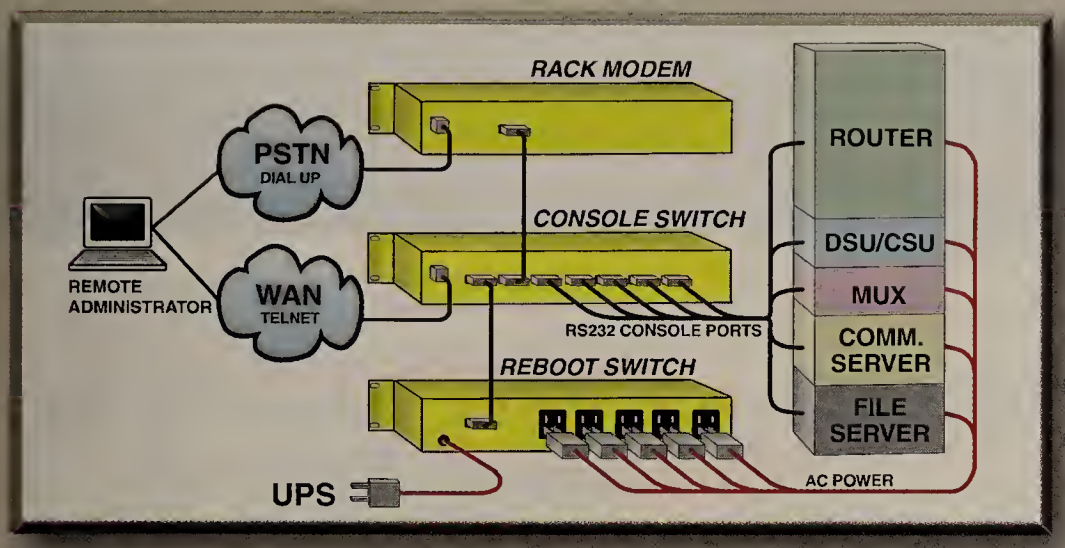

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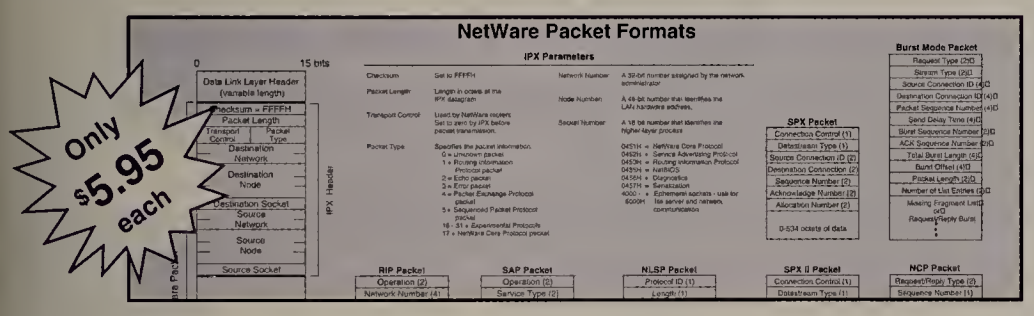

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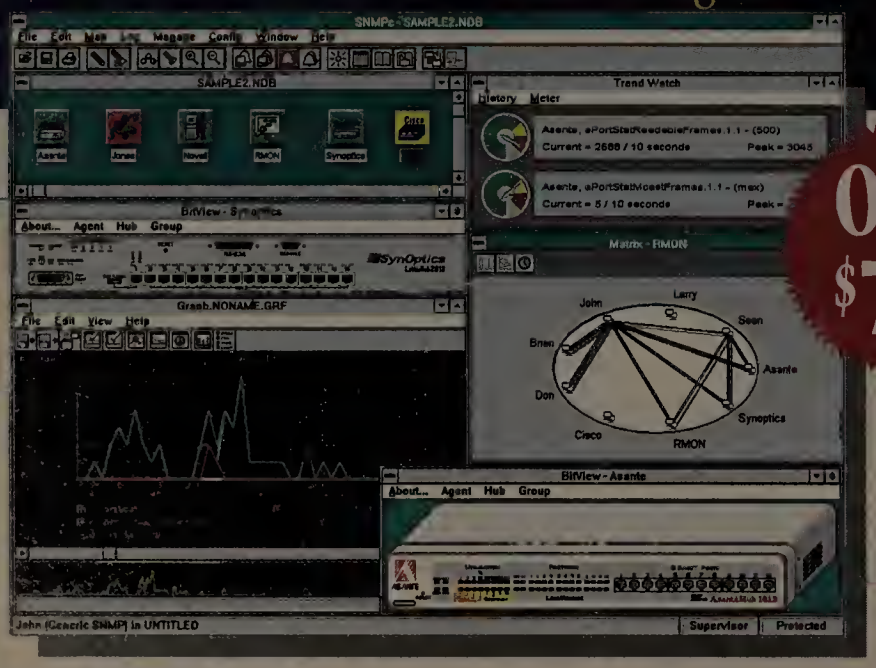

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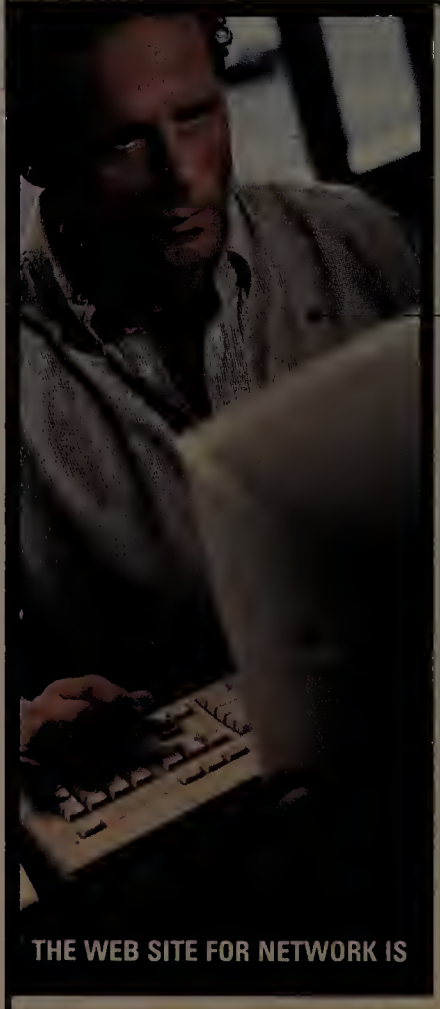

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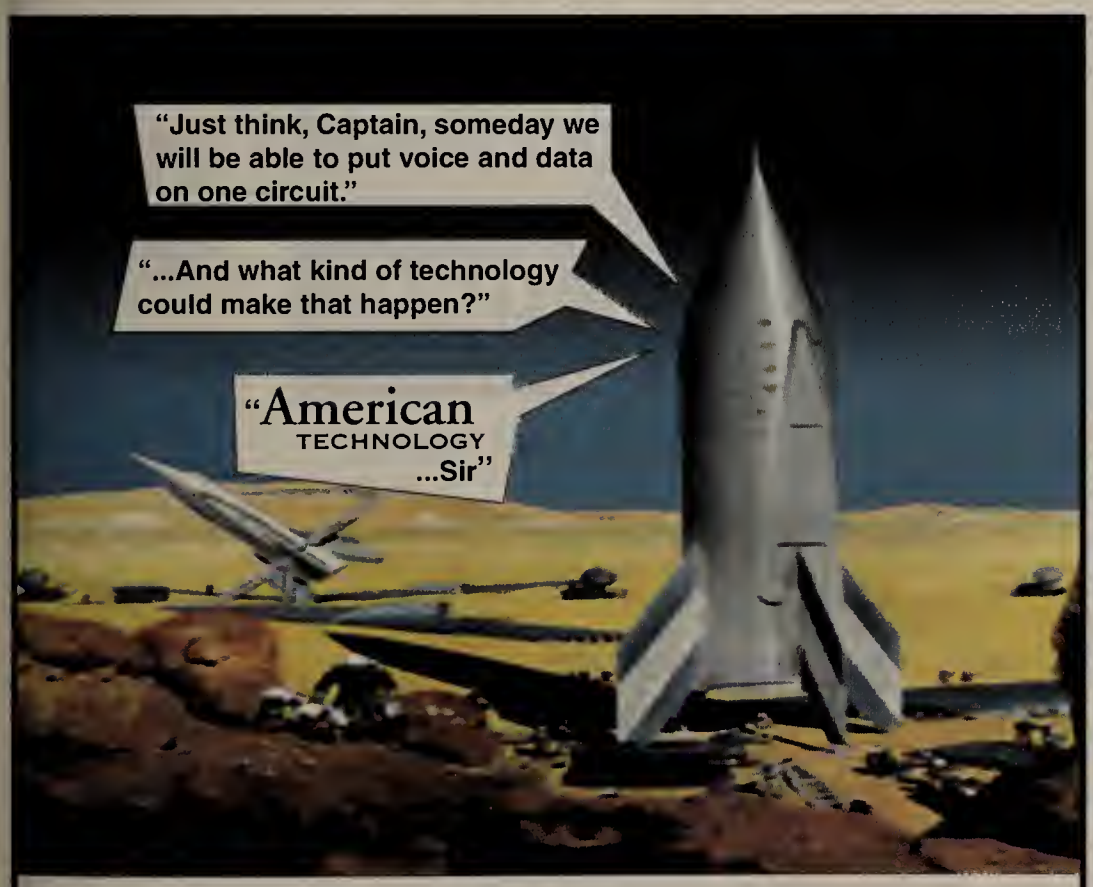

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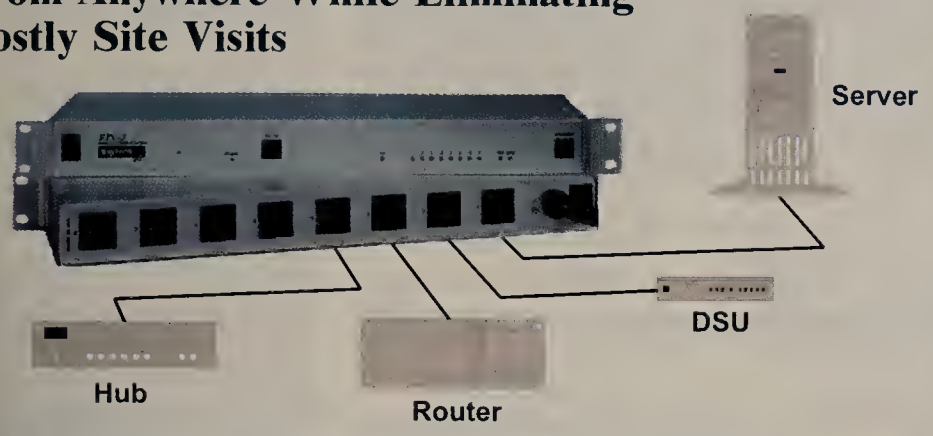

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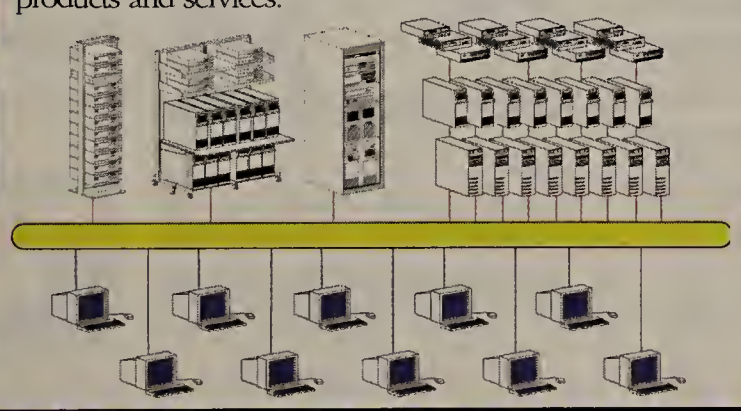

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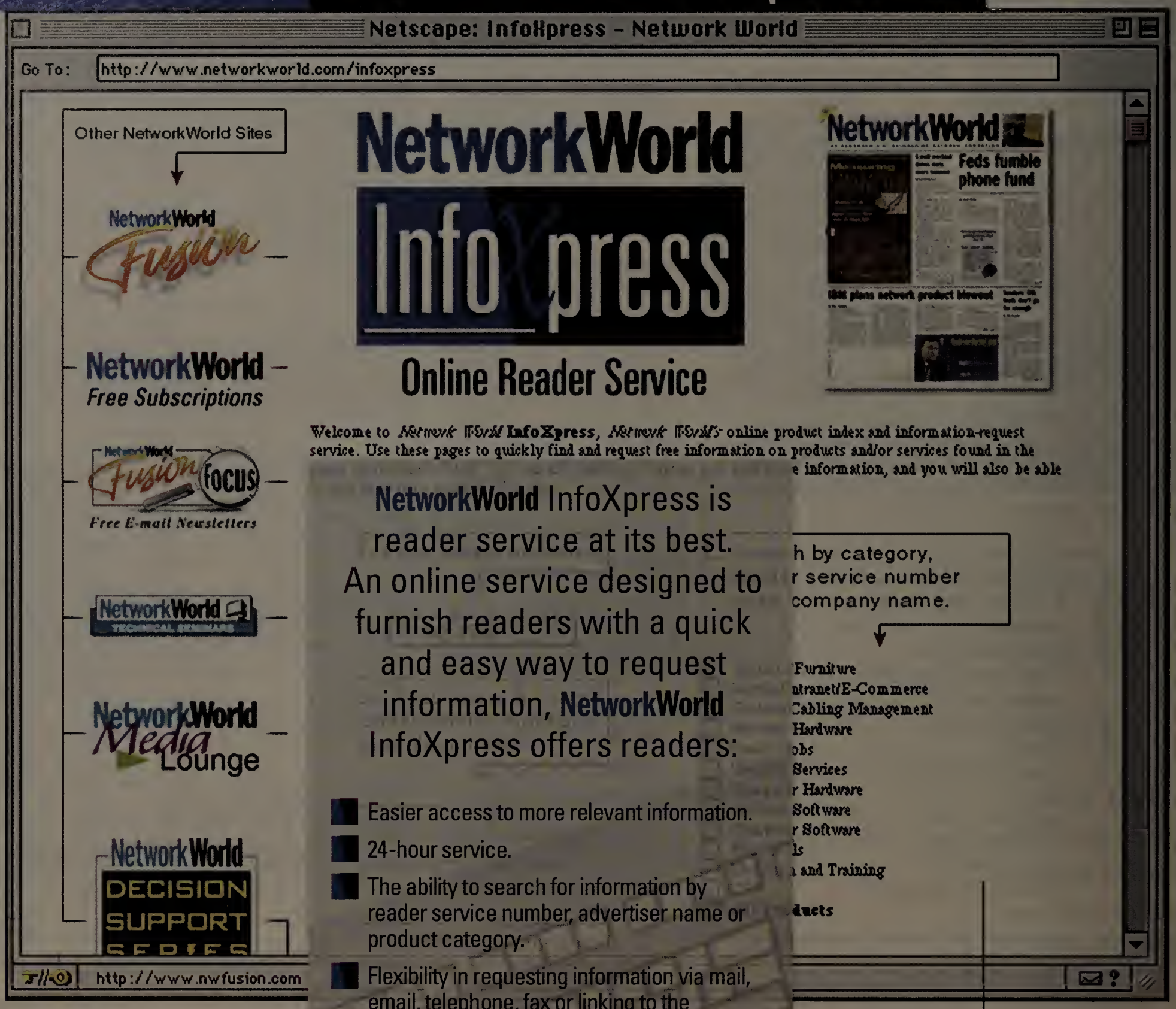

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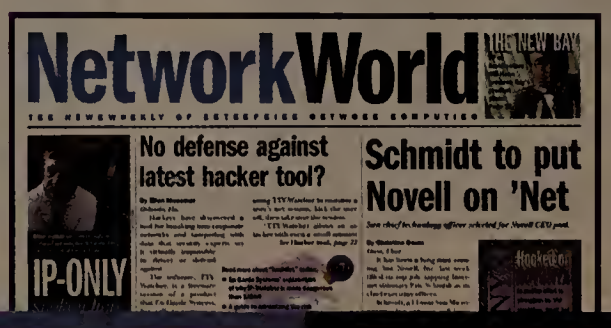

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Cisco bolsters Catalyst 5500 line

Nine-slot high-density box fills out flagship LAN switching family.

By Jim Duffy
San Jose, Calif.

The latest additions to Cisco's Catalyst 5500 LAN switch line are designed to help users take advantage of gigabit speeds without uprooting existing Ethernet infrastructures.

Cisco's *Catalyst 5509 switch.*

As expected, Cisco last week announced a nine-slot version of the Catalyst switch that fills out the mid-range of the company's flagship LAN switching line.

Cisco also rolled out a dedicated traffic analyzer module for managing Catalyst 5500 networks (for more information, see www.nwfusion.com, DocFinder: 8844). In addition, Cisco unveiled an OC-3 ATM module for the Catalyst 5500 that supports Multi-Protocol over ATM (MPOA) routing. The company also disclosed shipment and pricing for previously announced OC-12 MPOA and nine-port Gigabit Ethernet switching modules.

The nine-slot Catalyst 5509 is designed to meet high-density 10M/100M bit/sec and Gigabit Ethernet wiring closet requirements. It fits between the five-port Catalyst 5505 wiring closet device and 13-slot Catalyst 5500 backbone switch.

The Catalyst 5509 runs all of the LAN and ATM switching modules that currently run in the Catalyst 5500 line, including the 3.6G bit/sec Supervisor III switching engine. But the 5509 differs from others in the 5500 line in that its backplane delivers 3.6G bit/sec to each slot instead of isolating the 3.6G bit/sec in the switching engine.

Eastman Kodak in Rochester, N.Y., is morphing its data center network into a multigigabit infrastructure. The 5509 and nine-port gigabit card — which Cisco used to call "BladeRunner" — are playing key roles in that effort, says Eric Pylko, global systems coordinator at the photography giant.

"It's going to be gigabit between the switches and to our database servers and application servers," Pylko says. He adds that Kodak also plans to install Cisco's 13-slot Catalyst 8540 gigabit switch routers when the company starts shipping (*NW*, May 4, page 44).

The downside to the 5509 and BladeRunner is that users have to take extra care in designing their networks to keep gigabit traffic from hitting the 3.6G bit/sec backplane, Pylko says. That low-speed interconnect could become a bottleneck, he says.

One way that Kodak plans to keep an up-to-date network design is by using Cisco's new Network Analysis Module for the Catalyst 5500 line.

The traffic analyzer occupies a single slot in the Catalyst 5500 chassis and collects RMON and RMON2 statistics on each port, virtual LAN and Fast EtherChannel link. The analyzer also gathers statistics from Cisco's NetFlow Feature Card, an option that adds Layer 3 switching to the Catalyst 5500.

Finally, Cisco introduced an OC-3 MPOA card for the Catalyst 5000, complementing the company's previously announced OC-12 MPOA card. These cards allow Catalyst 5500 switches to function as MPOA clients in an ATM network by switching multiprotocol traffic over ATM virtual circuits.

The Catalyst 5509 is available now starting at $13,995. The BladeRunner line cards are shipping now and cost $2,500 per port.

The Network Analysis Module will be available in the fourth quarter. Pricing was not disclosed.

The OC-3 MPOA uplink module costs $12,995, and the OC-12 version costs $17,995. Both cards are shipping now.

✆ Cisco: (408) 526-4000

Infowar

Continued from page 8

reports — one with details for NIPC analysis and the other for public disclosure.

Another problem that could occur is if an organization reports a network security incident to the FBI, the organization's network is considered a crime scene and may be taken over and monitored by the FBI. This is one of the reasons "there is a documented reluctance of victims to report," says Steve Mitchell, a Department of Justice attorney.

Also, reporting a crime and pursuing a cybercriminal may mean the time and expense of preparing for a trial.

As a result of all these factors, the Justice Department estimates only about 16% of detected network intrusions or attacks are ever officially reported. "Some victims would prefer to conduct internal investigations until they get a handle on the problem," Mitchell acknowledges.

Through the NIPC, military intelligence operations and the FBI are moving into a closer formal collaboration. "We just created a Department of Defense computer forensics lab and we're talking about co-locating it with the FBI computer forensics lab," says Jim Christy, special agent, computer crime investigation at the Defense Department. This way both agencies could more easily share data.

For corporations that may want to report security problems to the NIPC, one of the main questions is whether the information they report should be treated as a possible law enforcement case or simply collected for intelligence purposes. At this point, the answer is not clear. "Perhaps what will come out of the NIPC collaboration is that intelligence may start investigating attacks without official prosecution," Christy says.

Some in the upper ranks of the military think the NIPC should evolve into the official military command to coordinate defense against everything from teenage hackers breaking into government computers to hostile states using electromagnetic weapons to disrupt networks. ■

Compaq

Continued from page 1

into NT sometime after next year's planned release of NT 5.0.

The initiative with Compaq is designed to "accelerate suitability of Windows NT for the most demanding enterprise applications," says Paul Maritz, Microsoft's group vice president for platforms and applications.

Compaq expects that adding NT directory and other technologies into Digital Unix will help the product rise to the top of the Unix heap. The agreement could also benefit Compaq by boosting customer demand for NT servers powered by 64-bit processors, such as the Alpha chips Compaq obtained via its Digital acquisition.

"Most everyone has a mixed environment of NT and Unix," says John Rose, senior vice president and group general manager of Compaq's Enterprise Computing Group. By working with Microsoft on this project, he says Compaq is ensuring that Digital Unix and OpenVMS are safe investments for customers that also want to use NT.

Perhaps not coincidentally, the Microsoft-Compaq announcement came just two days after Sun announced plans to better integrate Solaris — its Unix technology — with NT.

Working together

If Microsoft and Compaq make good on their promises, customers should be able to build server clusters consisting of NT and Unix machines. Currently, NT clusters are limited to two-node failover systems using Microsoft Cluster Server technology, though Microsoft recently acquired a company called Valance Research to strengthen its clustering technology. Still, Tandem's proven n-node clustering technology could meet customer needs for clusters of up to 16 NT or Unix machines.

Compaq's John Rose *touts "NT-friendly Unix."*

The clusters could also support a greater variety of applications and services, including high-speed messaging and load balancing. The clusters could be managed remotely via a Web interface. In addition, Microsoft could incorporate Tandem technology into NT so that NT machines could essentially monitor themselves.

Users should also find it easier to link NT and Unix machines in those environments where an NT Web server needs to access information in a database housed on a powerful Unix system.

And NT systems should be able to take on much of the heavy lifting themselves by incorporating Tandem's iTP Payment and iTP Store tools for high-volume electronic commerce.

Among the technologies Compaq customers can look forward to should be a Digital Unix edition of Microsoft's Internet Explorer Web browser and support for Microsoft's Active Directory, which can be used to build single sign-on applications. The companies will also integrate Microsoft's Component Object Model into Digital Unix to widen the development options for those shops looking to build distributed applications.

This marriage of technologies can come none too soon, says Mike Udrow, chief technical officer at JamTV, an online music store that already runs Microsoft Commerce Server on Compaq hardware. He's confident that NT will be able to support the most important business applications, but wonders how soon the companies will be able to deliver integrated technology.

"I wish I had it today," he says.

Microsoft and Compaq declined to go into the financial terms of their agreement, which includes both the transfer of intellectual property and the sharing of staffs. ■

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NT 5.0

Continued from page 1

Year 2000 compliance across desktops.

● To take advantage of new NT 5.0 security features for supporting outsourced network services.

In exchange for implementing NT 5.0 this early in the game, these customers get unprecedented support from Microsoft. The support entails free on-site engineering help and a direct line to the NT 5.0 development team.

Even with all this support, however, Microsoft officials concede that no Rapid Deployment Program participant is planning to walk the NT 5.0 Beta 2 high wire without some sort of safety net in place.

Ikon Office Solutions, a worldwide provider of office equipment and technology services, is one of Microsoft's most aggressive Rapid Deployment Program participants, says Microsoft's Jonathan Perera, lead product manager for NT.

In the next 30 to 60 days, Ikon plans to go live with Active Directory at its corporate network center in Atlanta, according to Jerry Condon, Ikon's company practice manager.

Six NT 5.0 Beta 2 servers are expected to host a centralized directory service for Ikon's 41,000 users worldwide. Ikon engineers will use Active Directory Service Interface modules residing on the company's existing network operating system and application directory databases to push directory information from those information stores up to the NT 5.0 Active Directory service.

Condon expects this configuration to give Ikon network managers a central place from which to administer end-user access rights and give end users single sign-on capabilities to various enterprise applications.

"But the reality of the situation is that anything that directly affects end users is not solely reliant on NT 5.0," Condon says. So if one of the NT 5.0 servers crashes, end users will not notice, he says.

While end users will be logging on to the NT 5.0 boxes, Ikon has only configured the machines as back-up domain controllers. Should network access be denied at the Active Directory level due to a problem with the beta code, users will still be able to log on to the network via an NT 4.0-based primary domain controller.

Ikon has no plans to move its remaining 100 NT 4.0 servers to NT 5.0 until Microsoft makes its third beta release available. Microsoft has not yet set a date for that release.

Meanwhile, Condon expects to use the NT 5.0 Beta 2 Active Directory in conjunction with several other new NT 5.0 services, such as Intelli-mirror, which ensures that the look and feel of a desktop is the same regardless of where the user logs on. Ikon plans to use Intelli-mirror to support roaming users and electronic software distribution for Ikon employees who are willing to use NT 5.0 as a primary desktop operating system.

Other early adopters are using this prerelease version of NT 5.0 for managing overall network security, Perera says.

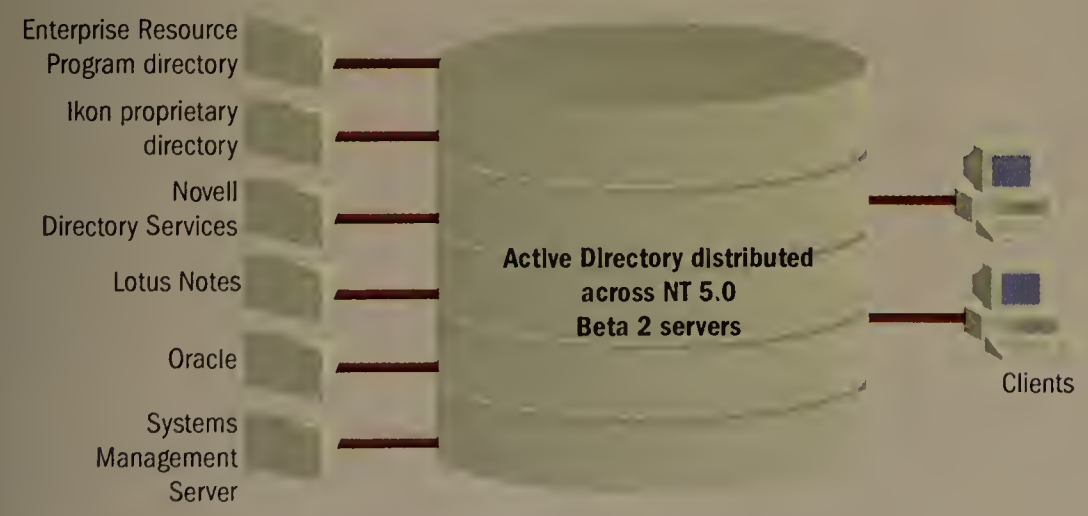
For example, one Rapid Deployment Program customer that Perera declined to name has opted to deploy networked kiosks running NT 5.0 workstation software on its manufacturing floor. This company plans to establish strict security profiles that will effectively lock down these machines by controlling which applications employees can launch from them, he says.

Ikon is also looking to use the security tools available in NT 5.0 Beta 2, Condon says. The company will use the security technology in its Vancouver office to support extranet services that let customers offload LAN administration to Ikon, he says.

NT 4.0 security technology could not support this type of extranet service due to the nature of the software's all-or-nothing administrative rights. With NT 4.0, if you wanted to delegate administrative tasks to multiple network managers, each had to have full administrative rights, and that could open the door for attacks. Active Directory allows for more granular levels of administrative rights, minimizing the number of people who have direct access to Ikon customers' networks, Condon says. ■

GOING LIVE WITH NT 5.0 BETA 2

Ikon Office Solutions is ready to roll out NT 5.0 Beta 2 across six servers that support Active Directory as a central store for six directory services and databases scattered across the company's network. Participating end users will be able to access any of the directory services via Active Directory.



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THE MICROSOFT REPORT

By Christine Burns

EVERYBODY DOES IT. Microsoft lawyers are demanding that a slew of the company's rivals and partners produce documents that Microsoft claims will show the companies held high-level strategy meetings in which they conspired against Bill Gates and company. Microsoft friends Hewlett-Packard and Compaq, and foes Netscape, Apple, IBM, Novell, Oracle and Sun, all received subpoenas.

Specifically, Microsoft demanded documents regarding these companies' collective plans to develop a flavor of Unix that would rival Windows on all fronts. Microsoft, accused by the government of violating antitrust laws to protect its Windows operating system franchise, wants to use these documents to show that other companies also routinely collaborate in alliances against common competitors.

It's unclear whether Microsoft's action will delay the company's scheduled Sept. 23 court date with the government.

COURTING IRONY. Perhaps Microsoft's collection of the above-mentioned documents could be automated by a new BackOffice-enabled application the company is touting on its Web site (www.microsoft.com/presspass/features/9-7efiling.htm). E-Filing, developed by Choice Information Systems in Newport News, Va., is a software package that digitally links law firms to the courts.

A LITERARY PIE IN THE FACE? Gates is back on the hot seat with the introduction of journalist Wendy Goldman Rohm's new book, *The Microsoft File: The Secret Case Against Bill Gates* (Times Books). Rohm likens Gates's manipulation of the software market to the machinations of John D. Rockefeller and his direction of Standard Oil at the turn of the century.

The book on Bill: *Shades of John D. Rockefeller.*

Rohm writes that Microsoft planted false error messages in Windows 3.1 beta code so that users of DR-DOS, Digital Research's alternative to Microsoft's operating system, would think the two were incompatible. The error messages were disabled for mass distribution, Rohm says, but may have convinced tens of thousands of Windows 3.1 beta users that they were better off with MS-DOS.

FIRESIDE CHAT WITH BILL. Gates last week seemed unfazed by the ever increasing body of negative press about him when he delivered an uncharacteristically relaxed speech to a crowd of technology business people at the European Technology Roundtable Exhibition conference in Lisbon, Portugal.

Gates said his worst nightmare would be to watch Microsoft sink into mediocrity. Even if Microsoft remained a "cash cow" but "sank under the waves" to become just another software company, Gates said his life's work would have meant hardly anything.

To keep the edge, Microsoft will open several more research and development facilities around the world, stay out of the IT services sector, and focus on high-volume software as its main goal, he said.

Gates said he couldn't see how Microsoft could grow to be any bigger than twice its current size, but he did get a chuckle when he said it "would be nice" to make a few more billion dollars.

Network World *Senior Editor Robin Schreier Hohman and Kristi Essick of IDG News Service's Paris bureau contributed to this report.*

AT&T

Continued from page 1

either have lower prices to begin with, or promotions of their own that discount official prices exceeding AT&T's.

But be prepared to speak up if you want the AT&T deal. The promotion requires documented evidence of a better price from a competing ISP. That means customers must provide a bill for current service or a written response to an official request for proposal.

What's more, the promotion is not being advertised, and many AT&T sales representatives don't appear to be informing customers of the offer unless they absolutely have to. That's because invoking the meet-or-beat offer often requires additional authorization from a centralized AT&T bid-response clearinghouse. In most cases, the meet-or-beat promotion also reduces the sales representative's commission.

Playing to win

Nevertheless, AT&T officials confirmed to *Network World* that the meet-or-beat offer is part of a high-priority internal sales effort dubbed "Play to Win." While UUNet and PSINet confirm they have been using temporary price promotions, Play to Win is a broader program that runs through year-end and promises to beat all major competitors in hotly competitive bidding situations.

The program is broken up into three parts, says Robert Marschall, global offer manager for AT&T WorldNet Managed Internet Service (MIS). The first two parts are a sales commission schedule and motivational sales contests. The third part is the meet-or-beat offer on 56K bit/sec through T-3 access lines under the AT&T WorldNet MIS offering.

Counting the commissions

Play to Win is all part of an effort to kick AT&T into the ranks of the top three to five corporate ISPs, Marschall says. But whether a particular user gets the meet-or-beat deal without the intervention of the AT&T bureaucracy may depend on his or her own sales representative.

AT&T's battle plan

When AT&T enters a major new market, it tends to offer a special price promotion to boost market share and keep its customers from straying to other vendors.

Summer 1994
AT&T offers discounts to users who reprogram PBXs to route intra-LATA toll calls to AT&T.

Fall 1995
AT&T offers one-time credits of $200 to $800 per port for frame relay contracts.

Through year-end 1998
AT&T offers to meet or beat the price of major ISPs on dedicated Internet access services.

SOURCE: AT&T, BASKING RIDGE, N.J.

AT&T divides each representative's ability to cut a deal into two levels — field-level authority and headquarters-level authority. Most of the time, field-level authority is enough to close a straightforward deal, Marschall says.

But once the meet-or-beat offer hits the table, the required discount may require headquarters approval. "And if headquarters authority comes in, that will affect the salesperson's compensation," Marschall says. "They won't go unpaid, but it does drive down the compensation."

In a lot of areas, the local salesperson's limited authority means Play to Win is "not showing up on the street," says Eric Paulak, a carrier-services analyst at Gartner Group, a consultancy in Stamford, Conn. "They're still doing a lot of the bidding centralized once they get the offer. They're not trying to beat everybody."

AT&T officials confirm they're using the meet-or-beat portion of Play to Win for reasons other than just winning bids. For example, AT&T is using it "to help in gathering competitive intelligence," Marschall says.

As a result, users may not see the benefits of Play to Win unless they really push for it, even on big deals.

One network manager in the South complains that during the course of recent negotiations for his company's entire telecom expenditures, the AT&T representative never brought up the promotion, even though the user specifically asked for a deal on Internet access.

The network manager also wanted the Internet usage bundled with all the voice and data services in order to kick his full corporate contract to a higher discount level, but the sales representative refused.

Even Play to Win might not have been enough to move the user from MCI Internet access service unless the Internet usage counted toward the entire corporation's AT&T discount. "Had AT&T come up with something and then bundled it with the other services, we might have been able to move," the network manager says.

Dog days of summer

AT&T is not the vendor with the highest official Internet-access prices — an unusual position for a company that is regularly the highest priced supplier in other telecom markets.

For example, AT&T's standard T-1 access price hovers around $2,000 per month, depending on whether users order the router configuration and management option of the MIS service, called MIS Plus.

By contrast, UUNET's standard T-1 prices range from $2,500 to $3,000 per month, depending on options. On the other hand, PSINet's service is $1,895 per month and several other companies start closer to $1,600. Sprint's official T-1 price also is around $2,000, while MCI's is about $1,800, according to spokesmen for the two carriers.

But all of AT&T's primary competitors have the potential to undercut its bids. Several sources say UUNET ran a cut-price promotion over the summer, with one source claiming UUNET was slashing T-1s to about $1,500.

"They had a very aggressive price because the summer months seem to be the dog days," the source says. A UUNET spokeswoman confirms there was a summer promotion but declined to specify the percentage discount or other details.

Similarly, PSINet two weeks ago began a promotion on dedicated access lines ranging from 56K bit/sec to T-3, according to Charlie Cary, vice president for product management in PSINet's Corporate Network Services unit. Until Sept. 30, the company is waiving installation fees and taking 10% off the basic price if the user takes a value-added service, such as Web hosting, IP fax service or enhanced security options.

The discount rises to 15% for two additional services, 20% for three and 25% for four. ■

AT&T slates entry in convergence sweepstakes

While AT&T pushes to build Internet market share that measures up to its leadership in circuit-switched services, the company is also preparing a new option for users that meshes voice, data and Internet traffic into one transport package.

AT&T is completing testing of a service that concentrates voice and data traffic directly onto an ATM premise device and then pushes it out over broadband local and long-distance links, sources say.

The project, first mentioned in January by AT&T Chairman C. Michael Armstrong and now reportedly code-named Integrated Network Connect (INC), will likely yield a concrete service announcement later this year.

The company has already discussed INC with network managers who use AT&T data services and its decade-old, circuit-switched corporate voice service called Software Defined Network (SDN).

SDN user George Yeager, manager of communications architecture and design for Columbia Energy Group in Columbus, Ohio, says the upcoming integrated ATM service is one reason he recently moved to a hybrid frame relay/ATM data network.

In Columbia's first implementation for data applications only, Cisco ATM switches at Columbia's high-volume locations will combine with frame relay connections to routers in branch offices via AT&T's frame relay-to-ATM interworking.

Once AT&T's convergence service is available, Yeager will consider moving to an all-ATM network for voice and data.

AT&T's project is similar to Sprint's Integrated On-Demand Network (ION), which also aggregates voice and data traffic over ATM premises devices and is due to enter user tests later this year.

One potential advantage for AT&T is that unlike Sprint, AT&T owns high-speed metropolitan-area networks in big cities through its recently completed acquisition of Teleport Communications Group. Sprint has said it will have to lease local broadband connections or dial-up digital subscriber line links to provide the local connections for ION users to reach Sprint's nationwide ATM backbone.

— David Rohde

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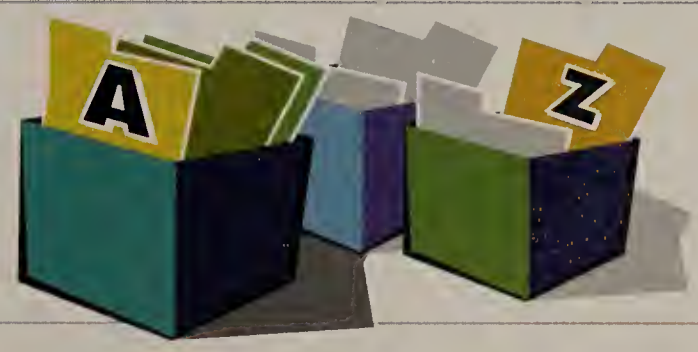

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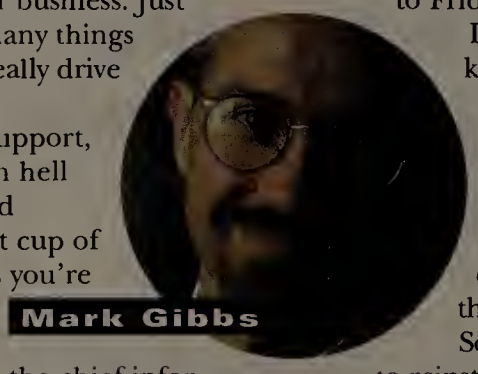
Backspin

Going nuts with program keys


Mark Gibbs

My wife tells me that one of my endearing qualities is crabbiness. And I must confess to possessing a little more than my fair share of curmudgeonly cynicism, spleen and venom.

But I contend such attributes are to be expected from anyone involved in the computer business. Just consider how many things out there can really drive you nuts.

If you're in support, it's the call from hell you have to field before your first cup of coffee or just as you're trying to leave for home. If you're the chief information officer, it's the ridiculous demands and expectations foisted upon you by a board that doesn't know or care to learn about IT.

If you're the Webmaster, it's the hackers who keep trying to trash your site and the ISP that seems incapable of dealing with your problem.

For me, there is this aspect of software testing that drives me nuts. Is it the manuals, you ask? Well, some do appear to be written by 7-year-olds for whom English is a second language, while others are apparently written for completely different products.

How about the user interface? Nope again. Some are a little weak, but there isn't too much about which to complain.

So what am I aggravated by? Glad you asked: It is those damned activation keys; all those clumsy and irritating anti-piracy systems that vendors seem to use to do little more than aggravate us.

I have found some horrendous activation-key methods. My least favorite was from a company that shall remain nameless, not so much to protect them but because along with curmudgeonliness seems to come a lousy memory.

This flock of fools sent me software that required a key to fire it up — not just any key, not one they could have been printed on paper or on the manual. Oh no, you had to call them for this one!

What time was it when I started looking at the wretched product? Six-thirty on a Friday night. I called the licensing number and, of course, heard "Technical support hours are 9 a.m. to 6 p.m., Monday to Friday."

It got worse. The unlock key was generated specifically for each installation. You had to recite a string that was displayed at the end of installation and the company would give you the unlock key.

So every time you wanted to reinstall the product, you needed a new key. What was this company thinking? I guess, in its world, systems never fail and require software to be reinstalled on a weekend.

Still other products I've tested required keys with more than 20 characters, both letters and numbers. Of course, you couldn't distinguish a zero from the letter "O" or a number one from a lower case "l" so it took about six attempts to get the key right.

One product I tested had keys that were paired so you had to enter both to get the application to work. Great. But why? Why not just have a single code? Why make it so complex?

Indeed, why use these silly systems at all? It is not the corporate user with which the vendor should be concerned, it's the hacker. If a corporation uses unauthorized copies, you'll catch them through a whistle-blower. But thinking these systems can keep hackers out is silly — most of the key systems can be easily defeated.

If you've been annoyed by key systems, let me know, and if you're a vendor that uses them, let me know why. In the meantime, I have some crabbiness to exercise. Now I wonder, whom or what I was planning to exercise it on?

Aide memoirs to nwcolumn@gibbs.com or on (800) 622-1108, Ext. 7504.

'Net Buzz

The latest on the Internet/intranet industry

MAGNIFI FOCUSES When **Magnifi, Inc.** made its debut in July 1997, the start-up billed itself as a "vendor of software to organize, manage and retrieve information across all media types on the Internet and corporate intranets."

Because that wordy description was longer than many start-ups' business plans, Magnifi by December had condensed it to "content management solutions for large repositories of rich data."

A month later the company was calling itself a vendor of the more au courant "knowledge management solutions."

In July, Magnifi refined its pitch, telling the world it sells "knowledge management solutions for marketing organizations."

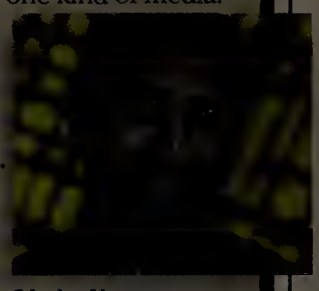
And later this month, Magnifi will launch a press tour to promote its "marketing automation solutions," essentially a group of software products built around Magnifi's application server and marketed specifically to, well, marketers.

Magnifi doesn't have an identity crisis. It's just a good example of how start-ups have to adjust quickly to find the most promising markets for their products.

"In early 1997, we researched 14 markets and found three with problems currently not being solved by technologies — large media companies, print publishing companies and marketing departments of Fortune 1000 companies," says Magnifi **CEO Ranjan Sinha.**

Since then, he says, Magnifi has learned that "broadcast media is not a big enough market, and print publishing has a focus on one kind of media." (Your guess here.)

Which leaves marketing departments. "That's where the money is," Sinha says. And that's what you call business logic.


Chris Nerney

'HELLO, MOTEL 6? WE'RE CANCELLING OUR RESERVATIONS' Start-up **Amplify.net** has scored a $3.5 million first round of funding from two Silicon Valley venture capital firms.

The money comes just in time for company officials to upgrade their accommodations for ISP Convention '98 later this month in San Jose, Calif., where Amplify.net will unveil its debut line of "transactive" bandwidth management software, called Bandwidth ValueAmplifiers.

Alpine Technology Ventures and **Aspen Ventures** joined in providing the funding to Amplify.net.

Hey, is this an A-list deal or what? Where are **Accel Partners, Stewart Alsop** and **Alan Alda?** Perhaps someone should ask Amplify.net Chairperson and **CEO Pauline Lo Alker.**

Alker herself is a newcomer to Amplify.net, joining earlier this month. From 1991 to last June, she was president and CEO of **Network Peripherals, Inc.,** a Wall Street success story when it went public in 1994 but now a victim of the commoditization of the Fast Ethernet market (current stock price: $3).

Amplify.net was founded in 1996 as **Aponet, Inc.** C'mon, stop it with the A words. It's annoying.

PROBLEM RESOLUTION ISN'T CHEAP Seattle-based **Primus** wants to help customers make their customers happy.

Primus sells Web-based problem resolution software designed to help support organizations boost customer satisfaction while reducing costs by solving problems quickly.

Now Primus has another $12.25 million in its marketing war chest, thanks to a fourth round of financing from a number of investors, including **Norwest Venture Partners, Trans Cosmos, Inc., Oak Investment Partners, EnCompass Venture Partners, Nevis Capital Management** and **Piper Jaffray Venture Fund.**

Primus is no starry-eyed start-up. It was founded in 1987, originally to develop knowledgebase design software for PCs.

The company's current line of Web-based products includes software that allows remote support workers to find and implement solutions to technical problems and software enabling customers to access solutions and solve problems themselves.

Maybe 'Net Buzz isn't where the money is, but it's where you can find the best Internet and intranet news. Contact Chris Nerney at (508) 820-7451 or cnerney@nww.com.

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[1] According to an independent study by the Dell'Oro Group.

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